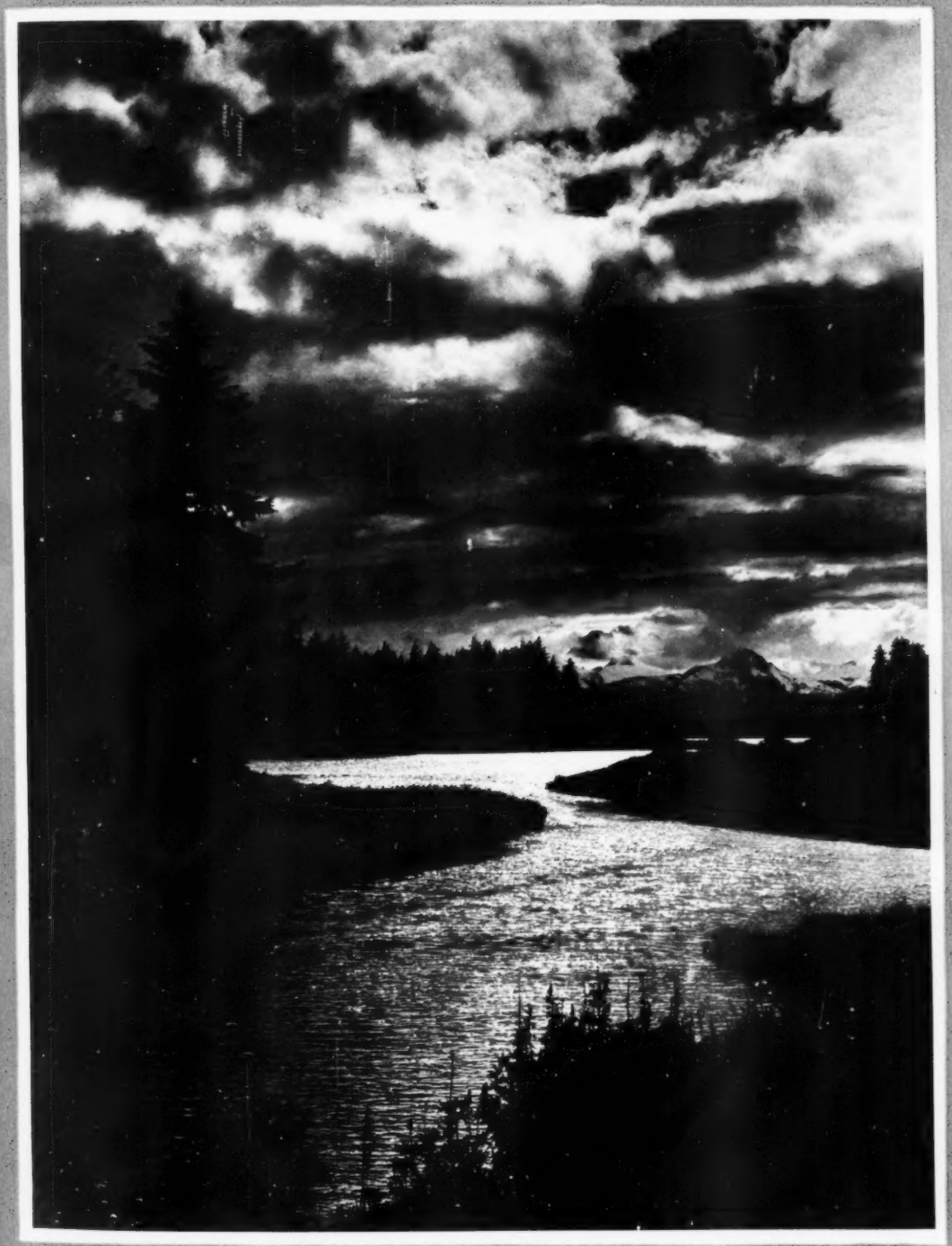
AMERICAN FORESTS



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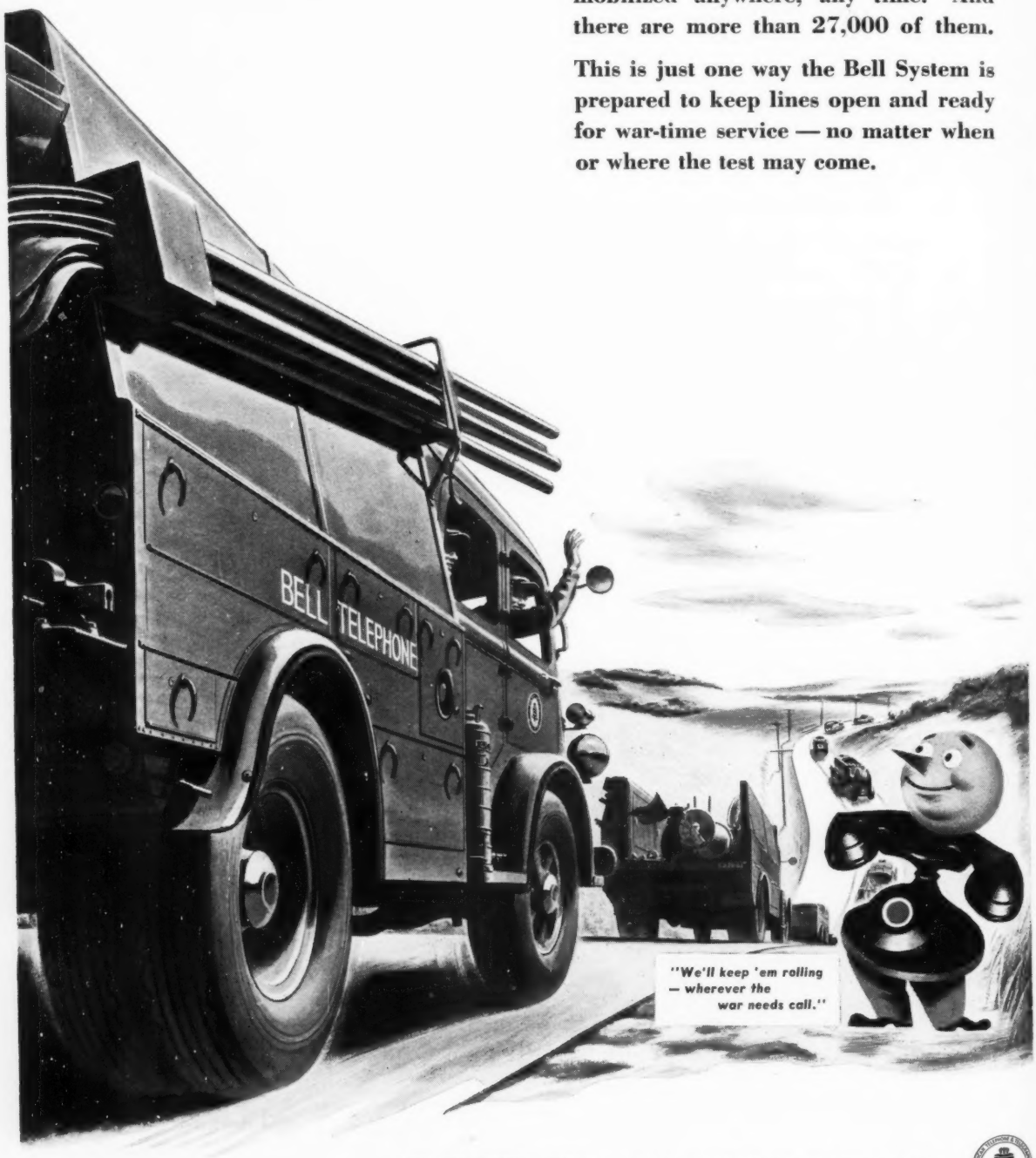

BELL TELEPHONE SYSTEM ... *Service to the Nation in Peace and War*

American Forests

Editor
OVID BUTLER

Associate Editors
LILIAN CROMELIN
ERLE KAUFFMAN

Published monthly by

THE AMERICAN FORESTRY ASSOCIATION

919 Seventeenth Street
Washington, D. C.

The American Forestry Association, founded in 1875, is a citizens' organization for the advancement of intelligent management and use of the country's forests and related resources of soil, water, wildlife and outdoor recreation.

Its educational activities seek to bring about a better appreciation and handling of these resources, whether publicly or privately owned, that they may contribute permanently to the welfare of the nation and its people.

In addition to publication of two magazines — AMERICAN FORESTS and CONSERVATION, both designed to keep before the people of the country important conservation questions and issues, the Association carries on educational programs in various fields including forest fire prevention, reforestation, protection of wildlife, prevention of soil erosion, preservation of wilderness areas, establishment of national forests and parks, advancement of forestry by private endeavor, the teaching of conservation in schools and the promotion of research in timber growing and forest utilization.

The Association is independent and non-commercial, and has no connection with any federal or state governments. All its resources and income are devoted to the advancement of conservation in the interests of public welfare. All citizens are welcomed to membership.

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Who's Who

Among the Authors in this Issue

HARRY BOTSFORD (*Fishing Is Good Medicine*), practical philosopher and outdoor lover, writes from his home at Titusville, in the beautiful Pennsylvania hills. As an association executive, he must travel thousands of miles, but his spare time is spent hunting and fishing, reading and writing. His articles are appearing in a wide circle of nationally known magazines.

Carl A. Rishell

CARL A. RISHELL (*Wood Goes Down to Sea in Fighting Ships*), associated as an engineer with the National Lumber Manufacturers Association, has been building and sailing wood boats since he was a youngster. Leaving Penn State to join the Naval Reserve in World War I, he scoured the Pacific in a patrol boat on a fruitless hunt for submarines. After the armistice, he returned to Penn State and was graduated from its College of Forestry. His early interest in boats persisting, during the last half dozen years he has assisted in drawing up specifications for wood ships for the government.

Seegar Swanson

SEEGAR SWANSON (*Trees Build Men*), newspaper man and free-lance writer, is a native of Wisconsin, and managing editor of *The Evening Telegram*, of Superior. Keenly interested in all phases of conservation, he is an ardent fly fisherman and president of the North Wisconsin Rod and Gun Club.

RUTH RINGLE (*Cork Oak,—Naturalized American*) writes from Berkeley, California. Her favorite subject is biology, and she has written many articles on trees, —finding a wealth of material in her native California country.

WILLIAM B. GREELEY (*The War Job for Foresters*) writes our guest editorial with certain authority. No one should know what that job is better than he, for he was Chief Forester of the United States for eight years. Now, as Secretary-Manager of the West Coast Lumbermen's Association at Seattle, he exerts a tremendous influence in conservation activities from coast to coast.

William M. Harlow

WILLIAM M. HARLOW (*Camps for Our Children*) teaches tree identification at the New York State College of Forestry and, in summer, trains leaders in organized camping and recreation for outdoor organizations and schools.

D. G. MOON (*The Fast-Growing Pines of Sumatra*) was introduced to our readers in this column last month, when he first discussed the timely subject of the natural resources of our allies, the Netherlands East Indies.

William T. Cox

WILLIAM T. (Bill) COX (*Wild Rubber—Can We Get It?*) is one of the best known foresters in the country. Early a champion of conservation, he has consistently fought its twin enemies—greed and crooked politics. With the United States Forest Service ten years, his later career as State Forester of Minnesota and as a member of the Biological Survey is well known. In 1929, at the request of the Brazilian Government, Mr. Cox explored the forests of all the Brazilian states and organized the Federal Forest Service for that country. It was then that he made a special study of the wild rubber situation in the Amazon River Valley—out of which his timely article published here stems.

H. Gleason Mattoon

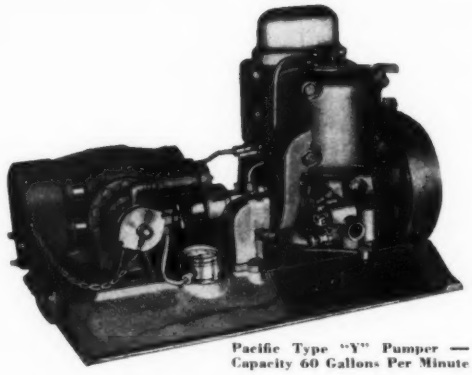
H. GLEASON MATTOON (*A Commercial Black Walnut Venture*), of Philadelphia, arboricultural specialist, has always been interested in the new and unusual in the propagation of trees.

THE COVER—"April Clouds"—In the Eagle River country, near Juneau, Alaska. Photograph by John Kabel.

AMERICA NEEDS *Green* FORESTS

Can You Prevent Losses Like This?

America is "All-Out" in Defense Against Fire . . .



Pacific Type "Y" Pumper — Capacity 60 Gallons Per Minute

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BIG TREES

THE GIANT ASPEN OF UTAH

The American Forestry Association is sponsoring a national hunt for the discovery and preservation of the largest specimens of the different species of typical American trees. Locate, measure and nominate your candidate in this competition. ACT NOW to make known and save the largest specimens of America's trees. For further details, send for the Association's special announcement of this Big Tree hunt. Mail your nomination with records and pictures to The American Forestry Association, 919 17th Street, Northwest, Washington, D. C.

Forest Supervisor Humphrey standing beside the giant aspen on the Manti National Forest, Utah

HAVING seen large specimens of trembling aspens, *Populus tremuloides,* in locations like the Dixie National Forest of Utah, and in the Gila National Forest of New Mexico, your big tree editor felt sure he knew all about aspens; but when J. W. Humphrey, Supervisor of the Manti National Forest, Utah, wrote to The American Forestry Association about the giant aspen of his forest and enclosed a picture of its trunk, your editor had to admit differently.

Tree books give the trunk diameter of this species as reaching eighteen or twenty inches, yet this specimen which is located in Twelve Mile Canyon, has a trunk diameter of thirty-nine inches at four and a half feet from the ground, and a circumference of ten feet two inches. Mr. Humphrey, who is shown in the picture, says that owing to its age this tree is in poor condition and may not live many more years.

Aspens grow even larger than this. Mr. Humphrey tells of one on his forest that died and fell from old age in 1940 which measured forty-two inches in diameter.

Though dead trees are not included in the big tree contest, we give you this last bit of information just to show that it may be possible to find an aspen larger than Mr. Humphrey's nomination. Can you find one?

FORESTRY'S most immediate and important job in helping to win this war is well stated by Colonel William B. Greeley, who contributes the guest editorial this month. It should be first reading in this issue.

Colonel Greeley is not an alarmist, as all who know him can testify. He is known nationally as having one of the keenest and most realistic minds in the forest field. Formerly Chief of the U. S. Forest Service, he is now secretary-manager of the West Coast Lumbermen's Association. He is able to speak, therefore, from a broad background of public and private experience—an experience that brought him into direct contact with problems of war and wood and with the potential striking power of forest fire as a national enemy in time of war.

During World War I he helped organize and served as Colonel with the American Forest Engineers of thirty thousand men who went to France and kept the Allies currently supplied with wood at the rate of a million feet a day. Earlier as head of the Forest Service in Montana and northern Idaho, he came to grips with probably the worst baptism of forest fires this country has ever seen—that of 1910 when virtually the whole Inland Empire was prostrated for days by flames and smoke. Throughout his long career, both in public and private life, Colonel Greeley has had to deal with great forest fires and he knows perhaps as well as any man living how easily and disastrously they may be employed by our enemies this summer—and as long as the war may last—to sabotage our war efforts.

His plea for adequate preparedness and one hundred per cent unity in doing this "toughest forest protection job of our generation" is thrice timely: first, because the danger is stark and real; second, adequate preparedness is still lacking; and third, the season of the year when our enemies can use forest fire to disorganize and disrupt our war action is upon us.

To do this job, our protective organizations must be *over,* not under prepared. They must be equal to the worst that may happen and wherever it may happen. Voluntary regional plans for coordinated all-out action such as are being made in the Pacific Northwest are encouraging but back of them must be organized mobile groups of regular fire fighters properly equipped and strategically located throughout the country who can reach fires quickly and who know how to deal with them.

Adequate numbers of these front line "regulars" are the crux of the forest protection job this summer. Colonel Greeley does not mention it, but the fact that they are not provided for at this late date ought to be a matter of national concern. The U. S. Forest Service is being relied upon to find ways and means of providing them. At the outset it adopted and has held to the course of seeking emergency federal funds first from the Office of Civilian Defense and that failing from Congress. Success along this line turns upon ability to employ the needed men locally when special funds become available. As this is written the middle of March the funds have not yet been forthcoming and the growing shortage of labor continues to freeze assurances that there will be local men to employ "when and if" Congress provides an emergency employment fund. In short, adequate preparedness against a Pearl Harbor somewhere in our forests this summer continues to wait on "money and men."

As against direct employment with special funds there is and has been another source for this much needed man power—the Civilian Conservation Corps, now 100,000 men strong and engaged upon work of less national moment. For reasons which the editor cannot fathom, federal protective agencies have appeared allergic to pursuing this possibility with the resourceful and aggressive action which the emergency demands. In the editor's judgment they are taking a long and dangerous chance on one-course action at a time when not only our forests but all our resources, the lives of our people and the preservation of our country are involved.

From now on until fall, our country will be open and vulnerable to deep stabs by the enemy with daggers of forest fire that may cripple war industries, deplete resources and disrupt the movement of troops, supplies and planes in many critical regions. We are at war and face to face with the most desperate forest protection emergency in all history. It is high time that the federal and state protective agencies assure advance preparedness to meet it by joining in an emergency call issued through their secretaries and governors that the man power of the CCC be made promptly available. Otherwise another epitaph of "too little and too late" may be in the writing.

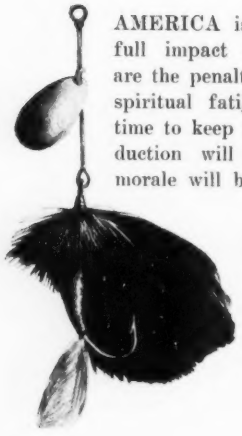
Ovid Butler

Editor.

Try fishing! A moment like this is good for the soul, mind and body

FISHING IS GOOD MEDICINE

By HARRY BOTSFORD



AMERICA is just starting to feel the full impact of total war. Inevitable are the penalties of mental, physical and spiritual fatigue. Obviously, this is a time to keep fit; otherwise essential production will suffer shrinkage; civilian morale will be lowered. More than ever before in our history the necessity for keeping at peak efficiency is imperative.

I commend to Americans the simple and primitive sport of fishing. Its virtues are manifest and manifold. Let us consider the facts; they will be found, I am sure, to warrant more than passing attention.

Fishermen are notoriously healthy. Perhaps that may be because fishing is the oldest of all outdoor sports and the only one which may be partaken of in moderation, in accordance with the desire or the physical needs of the participant. The lazy man, the man whose age or physical condition dictates a certain inelastic limit in the matter of exercise, can fish to his heart's content from the bank of a stream or from the deeply cushioned seat of a boat. The rugged individual who hankers for volume of exercise, who yearns for the healthy fatigue that comes of a long day spent tramping a trout stream or rowing a boat on a windy lake will find that fishing will bring him a full measure of keen and well-balanced exercise.

Fishing isn't a seasonal sport. The hardened fisherman enjoys his sport almost every month of the year and more than one hardy soul chops a hole in the ice of his favorite lake or pond and manages to get fish during zero weather. Some of us follow the sun and fish in a dozen states in the course of a year. Others, unable to afford or follow this practice, spend long and happy winter hours repairing tackle, patiently tying delicately fragile and balanced dry flies in the comfort of a genial wood fire blazing in the fireplace. It isn't a rich man's sport by any means. Sometimes the man with a fifty-cent cane rod brings in a better string than does the man with a hundred dollar Hardy fly rod. It's a sport where success does not always depend on great skill or constant practice. Let a man's golf clubs become rusty or his tennis racquet become warped, when he again takes up golf or tennis—he must practice long and faithfully before he becomes even fair competition again. Meantime he is miserable and worried. Yet, the fisherman who is deprived of his favorite sport for too long a period is quickly back in the game after a few preliminary casts, eager to meet up with the most spirited of trout, the most belligerent of bass and the mightiest of muskies.

H. Armstrong Roberts

Fishing a strong stream will help keep you physically fit now,—when to keep at peak efficiency is essential

Fishing is the most democratic of sports. You'll meet bakers, brokers and bishops along a trout stream; you will also meet brakemen, bankers and bums—all of assorted ages.

Health and angling go hand-in-hand. There's some type of fishing to fit every physical condition and an angler instinctively selects *his* kind of fishing. Too many sports depend on weather, plenty of sunshine and kindred atmospheric conditions. No so with fishing. A fine spring rain literally shouts for the angler to come out into it; a raw, October rain means something to the musky and the bass fisherman. A crisp November morning, a world whitened with frost, the air thin and invigorating, is an open and pressing invitation to the angler. Fish accommodatingly strike in all weather and temperature extremes.

So many sports can only be engaged in at certain predetermined and inelastic times of the day. Dusk and even the blackness of night represent no insurmountable barriers to the anxious fisherman. A bank-

er friend of mine frequently leaves his home at six of an evening, drives a hundred miles to his favorite lake and, shortly after dusk, his boat noses out into the serene and calm waters of one of the best bass lakes in the state. My friend is a bait caster. Comes midnight and he will pull for shore with a string of fine bass. Night fishing is a real adventure. Fish strike well, under certain circumstances, at night. Drift along the shore and cast toward the weed bed, blindly, waiting for the splash of the plug—it requires skill, a nice sense of distance and timing. Then, suddenly, comes the thrill of a smashing hit, the slender rod curves sweetly and you know you are fast to a good one and, sitting there on the damp seat of the boat, you try to outguess and outplay a lusty old bass out there in the darkness. That's fun—genuine adventure.

Patience! An angler without patience is akin to a pastor without religion. It must be practiced with calmness, with thought and observation. I remember a friend of mine who came out of the first World War with ragged nerves and a most uncertain and savage temper. Economic pressure tossed him in as the executive head of a growing industrial organization beset with growing pains and problems. He started to pull the firm out of the red and himself into it, if you gather what I mean. He was unhappy at home and in the office. His family and business associates were deeply worried.

His doctor, an infinitely wise individual, prescribed fishing. He was my friend and I was elected to take care of the teaching job. We had two or three most unhappy weeks. He broke expensive rods and he threw away expensive flies, the one because his vast impatience made him strike furiously when he hooked a good fish, the other because the flies failed to take fish the way he thought they should. He insulted me time and again, blasted at my alleged knowledge of the art and science of angling. Once he was about ready to give up what he termed a poor sport. I countered by telling him that he was the one who was a poor sport.

Then, slowly but surely, his innate intelligence came to the rescue. He started to exercise patience. I cheered when this happened. If he raised a trout and it didn't strike on the second cast, he wisely waited and rested the fish, trying again in a quarter of an hour. A rousing battle would inevitably result.

He learned not to fish constantly; that part of the genuine joy of fishing was to rest once in a while, to smoke a deliberate pipe and look at Nature in her best togs. He discovered that fishing was not a blundering adventure where the biggest and best fish were netted by the man who made the most casts and who covered the most miles. He learned that every stretch of water required study, careful experimentation as to the size and color of fly to be used. He became a considerate angling companion, refusing to fish all the best stretches first.

It was a curative adventure in every respect. At first lunch was merely an avoidable interval when we might as well have been fishing. His appetite awakened when I taught him that a two-hour lunch period was not unreasonable. We gathered water cress, made a salad, built a fire and broiled some trout and boiled some coffee—and ate with unashamed appetite. After lunch we loafed in the sun or the shade and eventually went back to fishing completely refreshed. All this happened years ago. Today my friend is a new man; he has forgotten the horror of the time when nerves and temper played unhappy tricks and sleep was a thing only others could enjoy. He is still an angler—and a good one. And superlatively healthy and sound of wind and limb.

A writer working under extreme pressure became a shadow of his normal self and was, it was feared, nearing a breakdown. He couldn't take time off to go fishing, much as he wanted to. I convinced him that he should learn how to tie trout flies and presented him with a vise, tools, an assortment of feathers and assorted silks—plus a few brief lessons. Tying a presentable dry fly requires skill and a steady hand, infinite patience. He put a little work table beside his desk and when he had a few minutes to spare or a plot refused to jell, he turned to fly making. He found it a welcome relief, a fascinating hobby. Presently he noted that his nervousness had decreased, that he thought more coherently when he sat before his typewriter. The flies he tied were patterned beautifully. Eventually the pressure of work lessened substantially and he was again able to fish but this time a new thrill awaited him—that of catching fish on flies of his own making. He informs me that the thrill utterly defied his descriptive efforts. Today there's a little corner of his workroom devoted to fly-tying equipment and the other day he wrote me that he was using his spare time, between chapters of his new novel, in making a new fly rod for me. This is a most ambitious undertaking but I predict the new rod will be all that could be asked—well built, nicely balanced, perfectly jointed, beautifully finished. I also predict that the new novel, too, will be full of merit.

Fishing is no sport for the individual who is careless and blundering. True, the law of averages will take care of such a sportsman and give him a decent fish once in a while. But, for good creels, fine and dependable sport, precision is an essential. To be able to cast a plug fifteen inches from a partially submerged log will probably mean a good small mouth bass—but casting that plug five feet from the objective will not only fail to interest the bass but may serve to drive him into new waters. The man who can cast a dry fly with such unerring accuracy that it lights naturally and jauntily on a narrow stretch of rippled water, will more likely be rewarded by the rise of a magnificent trout than the man who sloppily smashes a fly down on the same water with such force that even the most unintelligent trout knows it is a fake. To cast a fly, bass bug or plug with accuracy under changing physical conditions and shifting winds is to practice until precision is attained and becomes secondary. This practice can be readily carried out in any backyard, in any (*Continuing on page* 192)

Official U. S. Navy Photograph

A motor torpedo boat,—"blue-water Blitz"—this fastest fighter afloat carries four torpedo tubes and as many machine guns—is ready to roar instantly into a high, unspoken speed

WOOD GOES DOWN TO THE SEA IN FIGHTING SHIPS

By CARL A. RISHELL

"Why such impress of shipwrights, whose sore task
Does not divide the Sunday from the week;
What might be toward, that this sweaty haste
Doth make the night joint laborer with the day?"
—Marcellus, "Hamlet," Act I, Scene I

TO SHAKESPEARE'S query, the answer is *war*.

Ships have always been of momentous importance in war, and in this all-out war upon which we are engaged they mean the difference between victory and defeat. We need fighting ships to batter the enemy directly; we need cargo ships to carry men, arms and supplies along the ocean highways of the world to battlefronts on every continent.

Supply lines are the United Nations' most vital problem in a struggle which sees men fighting in steaming, tropical jungles, on snowclad mountains and frozen steppes, on the hot sands of the desert.

Official U. S. Navy Photograph

A coastal minesweeper,—steady, dependable,—keeping our waters clean, is doing a highly important and dangerous job

Only ships can maintain those supply lines. To provide them, hammers and saws sing from Maine to Florida, along the Gulf, up the Pacific Coast, around the broken contours of the Great Lakes. Now building are vessels whose decks will boom forth death and destruction, vessels whose holds will carry food and fighting men, vessels which will perform a thousand auxiliary tasks, some hum-drum, some dangerous, all necessary.

This vast building program uses a tremendous quantity of steel — steel so scarce that its supply is rationed. But it uses, too, a replaceable material with which our country is well supplied — wood.

In World War I, when we were building a single "bridge of ships" to Europe to accommodate a single AEF, wood played a major part in constructing vessels faster than the enemy could sink them. In those years, wood was a principal material for the actual cargo bottoms.

Official U. S. Navy Photograph

Built largely of wood, the sub-chaser rushes to duty. Its job is spectacular and packed with tense drama

Today, in a war which President Roosevelt has said will necessitate many AEF'S, wood is also taking a leading role in ship construction. But just as the methods of World War II differ radically from those of World War I, so does the use of wood assist shipbuilders in a different fashion.

This has been brought about by the development of two new engineering techniques. Shipbuilders substituted welding for riveting in the construction of steel ships, thus greatly accelerating their

building time. And engineers discovered that in land structures timber, joined with connectors, could do the work of steel.

To re-vitalize our ailing merchant marine, the United States Maritime Commission was set up in 1936. By June, 1940, the Commission had already laid plans for a big, new fleet of welded-steel cargo ships. When the 300-ship peacetime program was expanded to one that called for 1,800 cargo vessels in 1942 and 1943, the Commission merely extended its original plans.

An eighty-three-foot patrol boat—less spectacular perhaps but no less important in the story of our Navy's success

In this war, the cargo hulls will not be of wood. But the forests will provide the material which will build the shipbuilding plants. And wood will still be the basic material for the ever-growing second-line fleet of little ships.

Wood construction is employed to a great extent in the forty-two shipyards busy assembling the new cargo fleet. There is a total of 300 ways in these forty-two shipyards and each separate yard is a complicated enterprise that, besides ways, requires mold lofts, forging shops and scaffolding. About 500,000 feet of lumber is used in building one steel freighter.

Many buildings have had to be put up almost overnight in order to meet the demand for ships in a hurry. So, because speed was essential and steel was scarce, and because timber can now do much of steel's work, many of the shipyard buildings are of wood construction. For instance, pre-fabricated timber trusses were used to support the roof of

This little thirty-six-footer, open picket boat, is one of the thousands of little craft vital to our naval effort

a new mold loft at the California Shipbuilding Company's West Basin Plant. One shift of a regular crew erected all fourteen of the 116-foot trusses in a total of five and a half hours—less than twenty-four minutes' time for each truss.

And an assembly shop at the Tacoma Shipyard of the Seattle-Tacoma Shipbuilding Corporation, built with pre-fabricated timber, was completed within two weeks. More than 3,000,000 board feet of structural Douglas fir went into the principal buildings of that particular yard.

Still another example of the use of wood where steel is traditional is the 170′ x 400′ plate shop at the Richmond, California, shipyard, owned by the Todd-California Shipbuilding Corporation. Prefabricated timber trusses were employed for the job when engineers, who had originally specified steel, found themselves unable to get that scarce commodity.

This lack of steel brought about an odd state of affairs at the Bethlehem-Fairfield yards in Baltimore, where some of the Liberty ships are being built. The Bethlehem company also manufactures a corrugated metal siding, which it had planned to use for new buildings in its shipyard. But when the time came, the company learned that it couldn't get any of its own product. Wood was used instead.

Incidentally, there are sixteen shipways in the Bethlehem-Fairfield plant, twelve of them completely new, four renovated versions of ways formerly in use. And, through use of modern timber engineering methods, new ways were turned out at the rate of one every two weeks! One company alone supplied 5,000,000 board feet of lumber for the Baltimore yards.

Sugar pine is often used for the flooring of mold lofts, where it serves as a gigantic drawing board. Curved patterns for ribs and other parts of a ship are drawn in chalk on the mold loft floor. Templates—forms which serve as a guide for shaping steel — are designed from these chalked contours. Then the steel is bent to shape against the templates. Such a process demands plenty of free space in which to work, and this is guaranteed by clear-span roof trusses of wood.

When a battleship puts out to sea, there's little wood aboard her except plank decking. But, like the cargo ships, wood had to be used in her construction. And it could be used freely, because timber from our forests was readily available.

Although the launching of a battleship is always front-page news, there are other less-heralded ships, little ships, that play their part in our war. Maybe they're not in the line of battle when fleets meet in some desperate, mid-ocean encounter. But they fight —and they work.

A couple of Washington cab-drivers stood in a lunchroom reading a one-sheet newspaper posted on the wall. Headlines announced that another Navy mosquito boat had damaged a Japanese warship in a surprise action in the Far East.

The cabbies whistled their admiration. "Boy," one of them exclaimed. "If we built ten thousand of them things we'd lick the Japs in no time."

That's one manifestation of a public attitude toward these particular small craft that began when Navy Lieutenant John D. Bulkley gambled his unarmored PT-boat against the might of Japanese shore batteries and machine guns and sank a 5,000-ton enemy vessel in Subic Bay. Bulkley went unscathed and only a few days later another craft under his command, skippered by Ensign George E. Cox, Jr., repeated his performance. Cox also accounted for a 5,000-tonner with his torpedoes.

Americans were still thrilling at these exploits when it was announced that commanders of two other mosquito boats chose to fight it out with Japanese dive-bombers instead of running for convenient shelter. Gobs manned the machine guns which, with torpedoes, are the only armament the boats possess, and drove the Japs away with a lethal hail of bullets.

These and similar dashing exploits of the PT-boats completely captured the public imagination. Americans love individual deeds of daring. In every war we have fought they have cheered the dauntless men who sailed their way to glory in the predecessors of today's fighting eggshells.

With light, fast ships mounting only one gun, Revolutionary tars slipped by night into enemy-held bays and blasted men-of-war as they lay at anchor. They escaped, if they were lucky, before the British could beat to quarters.

Stephen Decatur, most colorful of Navy heroes, loaded the little *Intrepid* with men and in the dark, with cold steel, they drove the Moroccan pirates from the captured frigate *Philadelphia,* burned her and sailed away again from the hostile North African coast.

During the War of 1812, small privateers swept enemy commerce from the seas, their authority their letters of marque and their cannon. In the Civil War, Lieutenant W. B. Cushing achieved immortality when he drove a tiny steam-propelled launch, a spar-torpedo lashed to her bow, straight into the side of the mighty ironclad *Albemarle.* Cushing's launch was dashed into fragments by the *Albemarle's* 100-pounder but his torpedo sank the ironclad. Cushing himself swam to safety, the sole survivor of the expedition.

Our seagoing glamour girls of World War I were the sub-chasers, those lean, tough vessels that became known as the splinter fleet. They sent them and their gallant crews battling clear across the Atlantic, refueling in mid-ocean. Some of them went so far as the Adriatic and, in all, 269 went into the war zone. They were 110 feet long, sixteen feet in beam, and authorities calculated in advance that only one in ten of them would survive the Atlantic crossing. They were wrong: not one chaser was lost either to the enemy or to the elements.

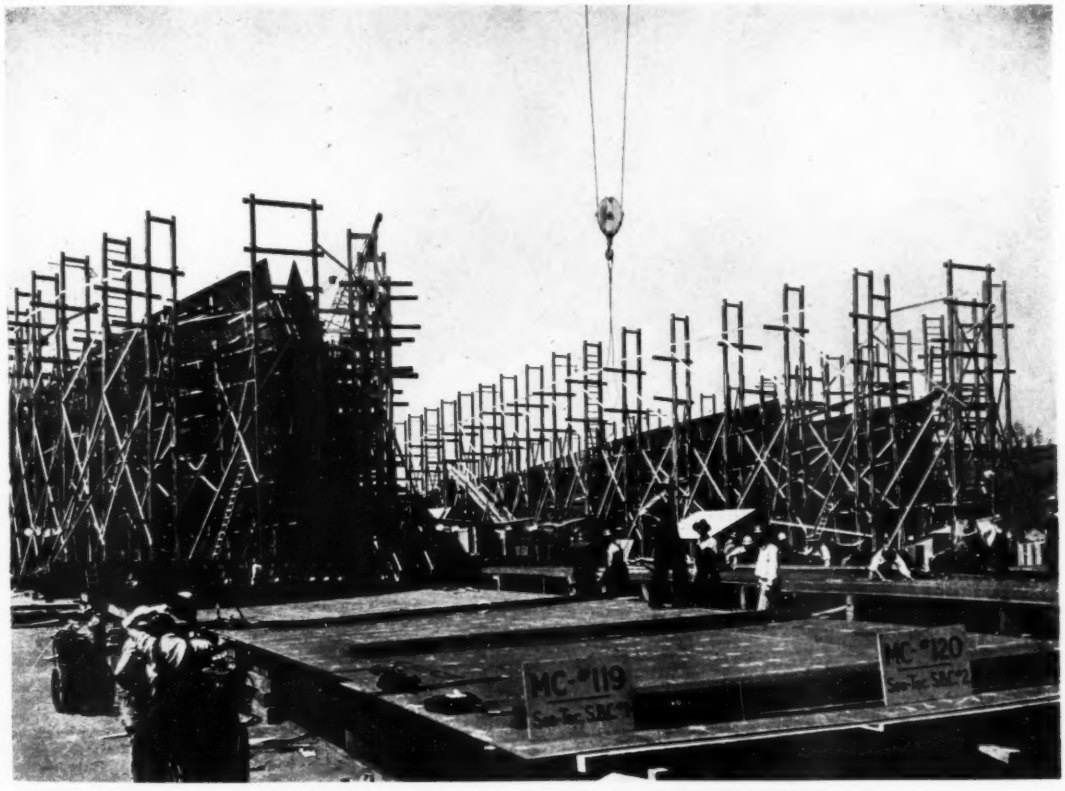
Built of southern pine, Douglas fir, white oak and cypress, sub-chasers are playing their part in this war, too, guarding our long coastlines against the

U-boat menace, ready to drop their lethal "ash-cans" wherever they suspect an enemy submarine to be lurking. Their service, like that of the mosquito boats, is spectacular, packed with drama and adventure.

But there are other types of small craft whose work goes unsung but which is nevertheless just as important to our success. Minesweepers, patrol boats, tugs, net and buoy tenders, floating workshops, landing boats, cargo lighters, dredgers, bomb target boats —craft like these may not make the headlines but they're vital to our naval effort.

to make the way through mined waters safe for fighting ships and cargo vessels. It's back-breaking, nerve-wracking work, fishing up the loads of hidden death. And when the mines are detonated close aboard, ship and men must be tough to withstand the force of the explosions. Danger is their business.

Of the three types of minesweepers now being built, two have hulls of wood. The coastal type is about 100 feet long, designed like a fishing trawler, with keels and frames of oak. Another type, intended for a wider scope of operations, is 135 feet long, double



Two freighters for the Government rise amid giant hedges of Douglas fir staging at the Todd shipbuilding yard at Tacoma, Washington

Where is it building, this prodigious flotilla that so vastly outnumbers the destroyers, cruisers, submarines and men-of-war that take part in pitched battles? It's building where our fleets have been built in the past, along the water, near the timber, near the pine and white oak and fir and cypress that form the hulls.

And who's doing the building? Why, adzes swing in the hands of men in their seventies, veteran shipwrights who comprise an elite cadre that teaches the youngsters how to do the job. Once-quiet shipyards from Maine to California now bustle with activity, their workers, like those of Hamlet's Denmark, turning the night into day.

Consider the humble minesweeper, whose job it is

planked and with steam bent oak frames. This model is armed with a three-inch gun and carries depth charges for use against submarines. Their wooden hulls not only adapt them for sweeping magnetic mines but also give them the flexibility necessary to withstand explosions close by.

Next time you're applauding some wild deed of a mosquito boat, think for a moment of the men in the sixty-foot target boats, whose job is to give the aviators something to shoot at with water-filled bombs. Their hulls are of wood but they're decked over with armor plate to protect crew and engines against the terrific impact of a "bomb" dropped from some dizzy height. No, there's no ex- (*Continuing on page* 190)

TREES BUILD MEN

Wisconsin's Experiment In Growing Trees In Prison Camps Is Proving Two-Way Benefit

By SEEGAR SWANSON

Prisoners planting pine seedlings — and the eventual harvest will be not only trees but men, — men with new spirit, hope and courage to face and mingle again with their fellows

TEN years ago the idea of reforestation took a firm hold in Wisconsin and has made rapid progress since. At the same time, there developed a new attitude toward the rehabilitation of prisoners confined in the state penitentiary.

It was a fortunate circumstance, because out of these two ideas came a merger of projects which gives Wisconsin millions of new trees annually and which returns to society an improved type of prisoner.

Briefly, Wisconsin is now raising trees at prison camps.

These camps—three of them—definitely mark a new advance in penology—in Wisconsin at least.

The first camp was established near the town of Gordon in the northwestern part of the state. Regarded strictly as an experiment at first, it worked out so satisfactorily that the two additional camps on the other side of the state—at McNaughton and Athelstane—followed as a matter of course. Although these are smaller, they are operated along the same line as the parent camp.

In the beautiful nursery at the Gordon camp, you see 25,000,000 baby trees. Soon they will be transplanted to make room for millions more, thus adding to Wisconsin's ever-expanding reforestation program. What a harvest will be reaped fifty to 100 years hence! What vast wilderness tracts will be recreated by the growing trees!

The prisoners who are raising the trees are having the advantage of fresh air and sunshine. This is probably just as important as the future benefits to be derived from the forests, for it means the prisoners are undergoing a rehabilitation that makes it easier for them to adjust themselves in society after they gain their freedom.

The prison camps have no high walls or barbed wire fences surrounding them, nor are there any iron bars or cells. There's not a firearm on any of the places. Only a few scattered signs remind prisoners they must not go beyond designated points. Yet in ten years the honor system has been so effective that only an infinitesimal number has escaped.

The forestry idea was inspired through success of three prison farms. It was when Daniel Woodward

served as warden of the state prison that men were first assigned outside prison walls in 1924. The real expansion of the farm idea, however, came during the administration of Warden Oscar Lee.

Today, both farms and forestry camps are under the jurisdiction of John C. Burke, who has not only established a reputation as an efficient head of the state prison, but who is known nationally for his modern approach to prison problems. He is credited with many innovations which are stamping Wisconsin as a leader in prison reform. These changes have been so successful that even the inmates have been inspired to write to the newspapers about them. Warden Burke draws upon his varied experience as a former probation officer in dealing with men under his control, and finds this background of immense value in penological work. Prisoners, he is convinced, can be rehabilitated.

"That is one of the principal motives of our prison camp idea," he says. Of course, there were other factors that prompted trial of the plan by the state board of control. Over-crowding of the prison itself was one factor. Another was the coming of the new laws year after year to stop prisoners from selling products on the open market in competition with labor. As a result of these laws, work within the prison was hampered, and so the warden and the board of control tried to visualize how they could employ men in other ways. But back of the move primarily was the deep-seated conviction that men could better be rebuilt in an outdoor camp and trained for reestablishment in normal society.

"Forestry," contends Warden Burke, "offers an ideal solution to the problem of labor competition. Planting trees is a long-time proposition, and the financial returns are slow in developing. It is an enterprise that private industry is apt to shun. Trees, on the other hand, mean so much to a state like Wisconsin and the nation as a whole that reforestation deserves impetus as a governmental undertaking."

Upon the shoulders of the prison camp superintendent falls much responsibility. These men must have the ability and temperament to deal with prisoners who have been compelled to serve time behind penitentiary walls. Fortunately, the man who a decade ago established the first camp at Gordon was just the type to inaugurate the forestry idea. He is Rupert Chadwick, London born and as English as his name sounds. For thirteen years he had served as a member of the prison staff at Waupun. He first learned to handle men as a foreman on the iron ore docks at Superior,

Proud of his own little patch of spruce, which he raises as a hobby in back of the prison camp barracks, Superintendent Chadwick is an inspiration to the men

Wisconsin, and in the steel mils at Duluth, Minnesota. Rough and ready, but sympathetic with the workings of a prisoner's mind, Chadwick commands respect in camp. He gets production, yet restores confidence in prisoners by making them realize that people have confidence in them.

When Chadwick first erected his camp, he had no definite notion what it was going to look like, except that it would be patterned after a logging camp. He plowed his way through a wild stretch of brushland near Gordon one hot summer afternoon, mopped his perspiring brow and sputtered:

"This looks good—just the place for a prison camp!"

It was so brushy that Chadwick didn't even notice the Eau Claire River scarcely a stone's throw away. This stream today serves as a boundary for the camp, and might easily be mistaken for a moat. It isn't intended to prevent prisoners from escaping, however, because there's generally a boat tied up along the shore, and the river runs only on one side of the barracks.

The first job was to throw up some buildings. These were crude affairs. Prisoners chopped down trees for lumber, rigged up some bunks, and prepared a kitchen. They made life as self-sustaining as possible by planting gardens.

In ten years there has been mushroom development. Prisoners recently completed an addition to the barracks, doubling accommodations from fifty to one hundred men. With the barracks is included an office for the three supervising authorities, a huge kitchen, recreation room, wash room, laundry building, and a sleeping compartment outfitted with steel beds and springs manufactured by prison labor at Waupun.

Once the buildings were up, Chadwick started a small nursery. With prison labor he soon had hundreds of young trees growing. But it became apparent that supervising a prison crew was one job and raising trees another. The result was that state forestry experts from the conservation department were given charge of the nursery while Chadwick had the responsibility of running the prison camp and providing the prison labor.

Prisoners work in shifts of eight and one-half hours daily, mostly in the forestry division. The trees they grow and prepare for shipment have been replanted in forests and cutover areas by CCC boys. The nursery also supplies trees for conservation groups for planting projects in their communities.

Life for the prisoners is far from drudgery. They realize they are working along constructive lines. Perhaps it's that creative urge that comes over a man when he gets his hands into mother earth. And when the day's work is done, the men have splendid opportunities for recreation. Particularly inviting is the bathing beach, with its diving board. Then, too, the Eau Claire River has some very productive fishing holes which lure those with Izaak Walton tendencies. Boating, of course, is not encouraged.

The forestry specialists have erected near the barracks several buildings for their own men and equipment. Included is a refrigeration plant for storage of seeds. Fronting these buildings are 180 beds of Norway and white spruce, 200 beds of white pine, 640 beds of Norway pine, and several hundred beds of Jack and Scotch pine. Each bed contains from 2,500 to 3,000 trees, according to Forester Orlanda Chada. The nursery, with 24,717,000 seedlings under cultivation, occupies twenty-eight of the 480 acres comprising the camp site.

In 1940 a total of 10,200,000 young trees left the nursery to be transplanted in forests. These were immediately replaced by tiny seedlings which in a few years will also be set out in forestry tracts.

There is other conservation work done by the Gordon prisoners as well, such as fire lane construction, eliminating fire hazards, building and repairing roads, erecting water towers, and cutting out a great deal of scrub oak. Practically no planting has been done on the camp grounds outside the nursery, inasmuch as there is a good stand of second growth timber developing naturally.

As superintendent, Chadwick rules the roost. Ask him if any "famous" prisoners ever served in his camp, and he'll snort:

"Famous? They all think they're famous."

That's his way of telling you he doesn't have any idealistic delusion about prison behavior. He feels that the camp idea is sound, but at the same time he reminds you he is dealing with men who at one time or another flouted the law, and that he must handle them accordingly.

The honor system, he reasons, has its limitations. It wouldn't do to let the prisoners set up their own form of government, or to let them think they have any authority.

"But it isn't as hard as it sounds," says Chadwick. "The men aren't hard to control. We have only three or four supervisors who keep a weather eye on them, but they don't strut around in uniforms flaunting firearms. We keep regular hours. The men know they are up here trying to earn good behavior credits so they can be legally free (*Continuing on page* 180)

FAITH

This is the way that the sap-river ran
From the root to the top of the tree.
Silent and dark
Under the bark,
Working a wonderful plan
That the leaves never know,
And the branches that grow
On the brink of the tide never see.

John B. Tarr (Reprinted)

CORK OAK—NATURALIZED AMERICAN

By

RUTH RINGLE

EVERY engine that turns in national defense needs a forest product—cork—to keep it running smoothly and without frequent interruptions. Cork gaskets and washers are "must" parts to keep the grease and oil at work. While felt is possible as a substitute and is used to a limited extent, its lack of durability entails interrupted operations of the machine. This explains why the bark of cork oak has been listed by the government as one of fifteen "critical materials" essential to keeping the wheels of defense production running. A further explanation is that we are one hundred per cent dependent on a foreign supply of cork.

California foresters long aware of this dependency have in recent years been investigating the possibilities of growing our own supply of cork oak. They have surveyed casually grown cork oaks in their state and after an extensive study believe that cork independence for America may be possible in the future. While not applicable to the present emergency the prospect will be good news to peacetime manufacturers who use millions of dollars worth of cork annually.

Cork oaks first came to California along with the gold-seeking Argonauts, but those early trees were planted to be ornamental rather than useful. About 1878 one John Benson got the idea of growing cork oaks for their bark. Benson knew how well cork oaks took to California soil and climate, for he had seen some of the majestic trees at Napa that were grown from acorns sent around the Horn from Spain in 1858. They should be a profitable crop, Benson reasoned, because the United States census showed that the cork industry even at that time was doing an annual business in this country of a million and a half dollars. That was a lot of money in 1878.

So Benson sent to Spain for acorns and planted them across his brown fields. Seventy trees grew to maturity on this Napa Valley ranch, their rich, evergreen foliage spreading a deep cool shade to shelter cattle from the summer sun.

But John Benson never realized his dream of selling cork from his grove. It takes at least fifteen years of growth before a cork oak is ready for the first "stripping" and those who later took over his ranch were not interested in harvesting a cork crop.

These California trees produce an essential war material — cork. The crop from one tree averages between seventy and eighty-five pounds a stripping

Sixty-two years later, however, Professor Woodbridge Metcalf, State Forester of California, convinced that the dream of commercial cork growing in the West could come true, stripped the first bark from Benson's trees. They yielded over 5,000 pounds of cork.

This is the first time, outside their limited native home, that cork oaks have been successfully grown and stripped of a fine crop of commercially valuable cork. The world's cork supply has always come from an area about the size of the state of New Jersey—a narrow strip along the Mediterranean shores of Africa, Spain and Portugal. France once tried to grow the trees in Brittany and failed. Japan tried, with the same results. But the Western part of the United States seems to be enough like their native land to make the growing of cork oak trees commercially feasible.

A great cork oak, planted as an ornamental during gold rush days and never stripped of its bark, may still go to work on a hundred different fronts, since cork has been listed by the Army and Navy Munitions Board as one of the fifteen "critical materials"

Most of the early California trees were grown as ornamental shade trees, and handsome trees they are. Their massed foliage of ovate-oblong, shiny dark green leaves, similar to holly leaves without the points, makes a picturesque silhouette against sky and hills. In a home garden or shading a park lawn, they add a serene beauty to the landscape. But only one other grove beside Benson's has been grown in all these years, and that was a grove of 400 trees planted by the University of California on the forestry station in Butte County in 1904.

Determined to give the possibilities of commercial cork-growing scientific appraisal and study, Professor Metcalf made a survey of all cork oaks in the state. He compared their growth and analyzed the factors contributing to luxuriance and cork production. As part of the analysis, trees ranging in age from ten years to sixty-two years were given their first "stripping."

The best record of growth and cork production was made by a group of fifteen trees planted along the highway near Sacramento about twenty-five years ago. More cork was taken from each tree, and they were larger, finer specimens than others that had been growing more than twice as long. These oaks were planted in good soil and, though they were not irrigated after the first two years of growth, an underground water seepage from irrigated adjacent farm land doubtless gave them ample moisture.

This need for water was apparent in the survey of other trees. The Chico grove soil is gravelly and not very fertile, yet trees growing near Big Chico Creek are large and luxuriant. The largest trees of John Benson's grove are near a rain-fed stream bed. Some acorns, dropped from these trees on the stream bank, have sprung to a natural growth of young trees, but no acorns have sprouted beneath trees in the dry hillside grove.

Cork oak bark grows in two layers. The inner bark, or phellogen, is the tree's life tissue. Each year as a new inner layer is added an outer one ceases to live, but remains on the tree as insulation against siroccos, the hot desert winds. Only a few other trees, such as the birch, can live if the outer bark is removed, or even if it is cut through all around the tree — "ringed." But a periodic removal of this outer bark apparently benefits cork oaks. The cutting must be carefully done, however, so as not to injure the live inner layer.

The Californians stripped and prepared their cork bark by the same methods used in Europe for generations. After cork was taken from the trees in large slabs, it was left in out-door piles for several days to season. Then it was boiled in great vats of water to soften the cork, increase elasticity, and to remove dirt, sap and tannic acid. Samples of this cork and some

taken directly from the trees without processing were sent to an authority for commercial analysis. His verdict was, "Tests made with California cork indicate this domestic cork is equal in every way to imported cork of the same grade."

California trees that had not been pruned branched quite close to the ground, making it difficult to get large, whole slabs of cork. Bark can be stripped from large branches, but is of inferior quality and difficult to remove. For commercial cork production, trees should be pruned while growing so that the mature tree will have a clear bole to ten or twelve feet above the ground.

Combining usefulness and beauty, cork oak along a state highway adds an artistic landscape effect as well as roadside shade, with its massed foliage of shiny, dark-green leaves

After trees are stripped, the fluted, grayish bole becomes a smooth column of pinkish tan color. In a few months it has turned to a red brown, then changes to almost black.

Trees grown in favorable circumstances, with sufficient water, fairly good soil and agreeable climate, should be ready for the first "crop" stripping when from fifteen to twenty years old, and should grow a new outer coat for removal every nine or ten years as long as the tree lives.

The amount and quality of cork taken from each tree was recorded, showing a greatly increased production from trees in wholesome environment. The sixty-two-year old trees planted by Benson averaged fifteen inches in diameter breast high from the ground, with a cork layer 1.7 inches thick, and each tree produced about eighty-four pounds of cork. The prize trees on the Sacramento highway, though only twenty-five years old, surpassed the older ones in diameter by two inches, produced cork of almost the same thickness and averaged seventy pounds of cork a tree.

Acorns of the cork oak vary in size, shape, type of cup and weight, and it takes anywhere from fifty-five to ninety to weigh a pound. Flowers appear on the trees soon after the first of August, and three months are required for acorns to mature. American trees do not produce large crops of seed, but several hundred pounds were harvested last year and planted in various state nurseries. (*Continuing on page* 187)

Stripping a small grove in California of its cork. The bark is left on the ground to season for a few days, and then processed by boiling in water

The Fast Growing Pines of Sumatra

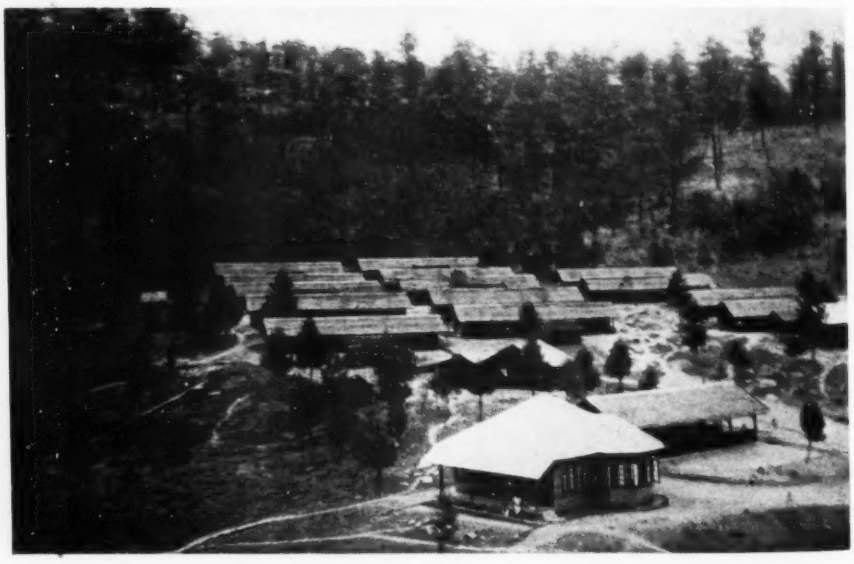
The Indomitable Dutch, Beset by War, Await Only Victory to Resume an Interesting Naval Stores and Pulpwood Development

By D. G. MOON
Photographs by the Author

IN THE Netherlands East Indies, the Dutch have developed a self-sustaining forest source for naval stores operation and pulpwood by the controlled utilization of the fast growing pines, *Pinus mercusi*, which are indigenous to the volcanic mountain territory of northern Sumatra.

In the March issue of AMERICAN FORESTS I told something of the history of these pines and of early investigations and experiments by government foresters to promote their growth for turpentining. These investigations, it will be recalled, revealed that second growth pines, under proper protection and management, made a very rapid growth and gave a high yield of gum—higher, in fact, than the virgin pines. The experiments were begun in 1924, under control of the Government Plantations Department, and continued for

Here a young pine, (right), is being overtapped before removal to thin the stand and increase the yield of producing trees (left)



Second growth pines growing on the slopes of rugged mountains in Sumatra. Living quarters of native workers are seen in the foreground

nine years. As a result of this pioneer work, practical operations were started in 1933 with the establishment of a small commercial enterprise, which yielded 600 tons of rosin and turpentine. By 1937 such progress had been made that a central distillation plant was built at Lampahan, near the foot of Boer Tellong, the old volcano. This plant has a capacity of 40,000 tons annually of combined rosin and turpentine. Shortly before the island fell to the Japanese in February, 1942, the output had been brought up to 12,000 metric tons, seventy-five per cent as grade X rosin and twenty-five per cent as turpentine.

The total net forest area under development in this section is about 280,000 acres, which is conservatively expected to yield 90,000 tons of rosin and turpentine a year. In addition, pulpwood from thinning operations is expected to average a cord an acre per year, excluding cat faces of tapped-out trees which will be used for fuel. The output of pulpwood will depend on the economic ratio in value of future paper products versus the naval stores. Other areas will also be progressively developed in ratio to the demand.

The gum is collected at various points in the forest and delivered to the distillation plant in tank trucks or drums over an average haul of fifty miles. The finished product is transported eighty-five miles by truck to the port at Lau, Seumawe. More than 150 miles of road have been built in the mountainous forest area, following the slopes in easy grades. Roadbeds are well surfaced for truck transportation.

Pulpwood investigations were first made at the Government Plantation laboratories in 1936. Finding *Pinus mercusi* somewhat similar to the pines of our own southern states, the government's technical director was sent to the United States to observe and study in the South new developments and mills for reduction under the kraft or sulphate process.

In Sumatra, the problem to be overcome in considering pulping operations was one of transportation of wood to a suitable mill site. The mountainous character of the forest areas made them inaccessible to railroads for either raw materials or finished product. As they lay mostly, however, upon the slopes draining into the Djamboe Aje River, experiments

A forest collecting station for gum. From here it is hauled in tank trucks or drums, sometimes fifty miles, to a central distillation plant.

At Lampahan, with the volcano Boer Tellong in background, is the central distillation plant with a capacity of 40,000 annual tons of turpentine and rosin.

were made with the idea of floating the pulpwood downstream 150 miles to Tenpanbate, which was within a short distance of both port and rail facilities along the lower lands bordering the east coast of Sumatra.

At first it was apparent that river driving the freshly cut pulpwood would result in too great a loss from "sinkers." Further experimentation, however, developed the fact that the wood could be cut, peeled, piled and dried on the plantations to twenty-five per cent moisture without deterioration. In fact, during my visit to Sumatra just before the attack on Pearl Harbor, I saw some of this wood. It had been stored in piles for a period of eighteen months and it was only then beginning to show evidence of blue stain. The test runs on river driven wood when dried out for relatively short periods at the proper season of the year indicated that loss by sinking would not exceed three per cent.

With demonstrated assurance that means for transporting the wood existed and that the pines had good pulping qualities, a long fibre length and uniformity of moisture and quality, the government decided early in 1941, in spite of unsettled world conditions, to proceed immediately with a kraft pulp and paper mill. Plans called for a mill with a daily capacity of 150 tons, seventy-five tons to be bleached because of the ready market available for such products in the Indies for wrapping, containers and other papers for use both in domestic consumption and export packaging. This mill and other industrial projects were to be designed and built by American engineers and contractors.

As has been stated, the early demonstration tracts and subsequent commercial operations clearly developed that yield was greater from young pines than from the old trees. It was also clear that to take advantage of their marvelous possibilities for quick growth, thinning operations were necessary.

With good protection against fire and cattle, and occasionally from elephants, cleared lands propagated from original seed trees, or from planting when necessary, formed a carpet of pines running a thousand or more to the acre. These were thinned out at least every second year in progressive stages. Within four years these trees had attained a height of from eighteen to twenty feet. Up to their twelfth year, the rate of growth was about five feet a year. By then the pines had attained heights of from fifty to seventy feet, and progressive thinning had reduced the number of trees an acre to 200, or from thirty to forty cords.

A careful study of the effects of thinning was made by dividing the demonstration forests into small tracts, each thinned at different rates. Important factors developed from these studies were: if thinning was too great, the young trees developed too rapidly and extended their tips, while the stems showed a tendency to curve and bend, thus creating compression wood at these points. Curiously enough, the second growth trees show some tendency to become crooked at all times, whereas the virgin trees were straight and tall. A fairly definite ratio of amount and period of thinning was established in (*Continuing on page* 190)

Cheap coolie labor, mostly imported from Java, is available for the Sumatra naval stores and pulpwood operations. Workers receive forty cents for a nine-hour day

New Horizons

CAMPS FOR OUR CHILDREN

By WILLIAM M. HARLOW

FROM a small beginning, some forty years ago, the camping movement has grown until now there are thousands of camps serving hundreds of thousands of children each summer. It is no longer a question of "Shall my child go to camp?" but rather what is going to happen to and *within* him after he gets there.

There are as many different kinds of camps as there are camp directors because a camp to a large extent reflects the personality of its leader. Still we may with profit divide camps into two groups: (1) those in which the forest is useful only as a beautiful green stage-setting for the baseball diamond, tennis courts, or running track, and (2) those which are not only in but of the wilderness, with all that this implies.

In case you do not think this difference is of any importance, let me take you to a large camp of 150 boys, in the White Mountains. Although this is called a "camp," there is not a tent to be found anywhere, but instead there are barrack-like cabins containing eight boys and a leader. When the boys are all in the small sized dining hall, the bedlam produced is indescribable. Due to crowding, and to poor morale, fights often break out at table and are quelled with difficulty by the counselors. After the meal is over, one of them gets up on a table and stamping his feet to keep time, leads the camp in a "song,"—but it is more like a riot, each boy trying to outshout the others.

In the morning, a certain number of boys is assigned to a counselor for "instruction" in "nature study," but since this activity is overseen by a college basketball star who has little interest or knowledge of the outdoors, the boys generally despise it,

and would rather draw the detail to roll the tennis courts. As a matter of fact, most of the counselors are college "letter" men, chosen for their ability to coach "Junior" in various college sports.

At best such camps are but outdoor schools, though possibly good ones. However, even if the morale were improved, the camp still has two serious drawbacks: (1) it is too big to handle as a unit, and (2) the program is simply one of city sports and activities transplanted bodily into the woods. There is nothing against city sports, except that they have little place in the wilderness which offers recreational experiences of a completely different order, experiences contributing in a unique way to the growth, moral fiber, and resourcefulness of the individual. Whoever at twilight has made his solitary camp upon the shores of a woodland lake, and while he listened to "the birch log burning," has watched the moon rise and make its silvery path across the water, has learned many things intangible, but none the less real, and always vital.

Five miles away from this first camp is another. For all practical purposes it might as well be on the other side of the world. In the first place, it is a *small* camp. You cannot understand or experience what the wilderness has to offer except individually or in small groups. In this camp of thirty-five boys, there is no baseball diamond, no tennis court, no running track or jumping pit; but there are canoes, woodsmen's crosscut saws, and axes; and a craft shop where the campers take delight in making their own paddles and bows and arrows. Four boys and a leader comprise a tent group, and instead of finding the tents side by side in a stiff formal row, they are scattered along woodland trails which lead to the dining cabin and administrative buildings. Instead of one so-called "nature counselor," every leader has a keen interest in the out-of-doors, and is continually exploring with his campers the possibilities of fun and adventure to be found in the forests about them. They are reliving some of the primitive experiences of the American pioneer, and are building within themselves qualities of character which shall last them a lifetime,—qualities not only of permanent value to themselves but also of first importance to the nation of which each one is a unit.

What are some of these unweighable but essential qualities? *Resourcefulness* to meet any emergency, using materials at hand. *Tolerance* of one's fellows; if you would know someone, go camping with him! *Courage* (physical and mental); both were required the time your canoe just missed the partly submerged boulder while running that piece of white water. A permanent *deepening of spirit,* the result of many days and nights spent in the wilderness, with its mountain tops, sunsets, thrush calls at evening, and engulfing silences, to say nothing of its storms, lightning, foam-flecked lakes, and pelting rain. All these things are inherent in any real camping experience, but totally unknown in the large, regimented, "country club" sort of thing now so commonly called a camp.

Do you think that by reading the camp bulletins you can necessarily discover to what kind of a camp you are sending your youngster? One camp director stated publicly that when it came to program, he had everything from "soup to nuts." Perhaps, for instance, archery was included, but this is only a name having something to do with bows and arrows. In some camps archery has become a formalized thing. The camp purchases the tackle and since good equipment is expensive, the campers are warned to be very careful with it. However, experience shows that having been handed such equipment, the child has only an artificial sense of values, and no basis for judging the cost of his tackle, never having made any. In any event, during the excitement of competition, arrows will be stepped on and broken carelessly when the archers, after shooting, approach the target to retrieve their shafts. Shooting is done at a standard distance, and the purpose is to produce crack shots who can make as many "golds" as possible.

While this is excellent training for eyes and muscles, it falls far short of what "archery" means in a woodcraft camp. There, seasoning from previous years, will be found in the wood shop rough staves of hickory, or ironwood; or if such woods are not obtainable, at least suitable material will be provided from which each camper, if he (or she) wishes, may fashion bow and arrows. Particularly with the arrows, made most readily from selected dowel stock, individuality of the craftsman can be expressed by feathering and painting as suits his fancy. Of course this tackle is not as refined as "boughten" equipment but it characterizes the maker who takes more delight, and hence care in its use, than is possible with purchased material. Moreover, when an arrow is lost, as it often is in wilderness shooting, it is "too bad," but not a catastrophe, since another one can soon be made.

Although target shooting in the open may be a good way to start young (*Continuing on page* 186)

THE FEET OF THE YOUNG MEN

Now the Four-way Lodge is opened, now the Hunting Winds are loose—
Now the Smokes of Spring go up to clear the brain;
Now the Young Men's hearts are troubled for the whisper of the Trues,
Now the Red Gods make their medicine again!

* * *

Who hath smelt wood-smoke at twilight? Who hath heard the birch-log burning?
Who is quick to read the noises of the night?
Let him follow with the others, for the Young Men's feet are turning
To the camps of proved desire and known delight!

Rudyard Kipling in "The Five Nations"

© 1903—Doubleday Page Co., New York City

NATION FACES GREATEST FOREST FIRE EMERGENCY

AFA Asks United Effort, Funds and Manpower to Meet Grave Threat to War Effort

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The Board of Directors of The American Forestry Association, meeting in Washington on March 19, by unanimous resolution called upon the conservation agencies and forest users of the country to dedicate their undivided efforts to the doing of those things that are clearly of first importance in promoting the common cause of Victory.

Because of the gravest forest fire emergency in the nation's history, made immediately critical by the impending danger of sabotage and aerial invasion, forest fire protection was set forth as first of three lines of action claiming undisputed priority.

In transmitting this Resolution to the President of the United States, the Association emphasized not only the urgency for adequate funds, manpower and equipment to meet the critical fire emergency, but also stressed that in the interest of unified effort, highly controversial issues, such as federal regulation of privately owned timberland, be set aside until the war is won. The letter to the President, and the Resolution unanimously adopted by the Board of Directors follow:

Honorable Franklin D. Roosevelt
The President of the United States
The White House
Washington, D. C.

My dear Mr. President:

Instructed by the Board of Directors of The American Forestry Association, I beg leave to transmit herewith a resolution unanimously passed at its meeting yesterday dealing with a situation which is charged with imminent danger to uninterrupted prosecution of the war.

May I take the liberty, Mr. President, of emphasizing this danger to you? It arises from the fact that during the months immediately ahead, our forests may and unquestionably will be used by our enemies as instruments to sabotage our war efforts in regions where forest fires may be effectively so employed.

We are deeply concerned over this danger in that adequate preparedness to prevent and deal with great outbreaks of forest fires is not now assured.

The danger applies to many areas and resources critical to our war operations. The Pacific Coast with its vast areas of forest and mountain land surrounding vital war industries and embracing supply lines of timber, power, water and transportation facilities, is particularly vulnerable to sabotage through forest fires by the Japanese.

The possibilities of employing this weapon for internal thrusts against us are naturally well known to our enemies, perhaps better than to our own citizens.

It needs only to be pointed out that incendiary fires set at many locations along our western coast at periods when the forests are highly inflammable could, as experience has shown even in normal times, cripple utilities, divert labor from factories, and in general create civic confusion and helplessness over wide areas.

Furthermore, a great forest holocaust timed for an invasion by our enemies could provide them with a covering smoke screen on both land and coastal waters.

This situation and the need of being prepared to meet it, in our judgment, transcends all other responsibilities of our forest protection agencies —— federal, state and private. It calls for their undivided effort and for emergency men and money sufficient to assure effective patrolling of critical forest areas and prompt location and extinguishment of fires.

This, we submit, is so clearly priority number one in the forest field as not to need elaboration.

To the end that it may have that priority and the united effort which its importance demands, we strongly believe the national interest demands that all controversial issues such as the federal regulation of privately owned forests, which are dividing the time, thought and effort of those working in the forest field, be set aside until the war is won without prejudice as to the merit or adaptability of different programs when normal conditions of life are reestablished.

We urge in particular that the U. S. Forest Service which is looked to as the responsible leader in the forest protection field direct its leadership in this spirit of common unity.

Inasmuch as the forest fire season in some sections of our country is already upon us, we further urge that adequate funds and manpower be speedily made available to the protective agencies in order that they may discharge successfully the great responsibility of safeguarding our war effort at this critical period of our national life.

We have been advised that the forest protective agencies estimate after careful study that some $15,000,000 are needed for the employment of emergency forces and the purchase of equipment to meet the exigency confronting them.

We urge immediate appropriation or allocation of the funds needed.

The urgency for action is great in that the available supply of manpower in critical areas is limited, competition of defense industries for labor is becoming more acute and the military services are depleting the forest protective agencies of regular and experienced fire-fighters.

Further delay, therefore, means last minute preparations at best and they may come too late to avoid a catastrophe that may prove a crippling blow in one or more sectors of our war program.

In conclusion, Mr. President, may I on behalf of our organization urge your immediate consideration of this situation?

Very respectfully yours,

W. S. Rosecrans

W. S. ROSECRANS

President, The American Forestry Association

Resolution Passed by the Board of Directors of The American Forestry Association on March 19, 1942

Our country being now engaged in a life and death struggle in which the protection and use of our natural resources are essential to the winning of the war and the achievement of peace, the Directors of The American Forestry Association call upon all conservation agencies and forest users —— federal, state, and private —— to dedicate their undivided efforts to the doing of those things that are clearly of first importance within their field in promoting the common cause of victory.

In the forest field they hold that three lines of action now claim and should have undisputed priority. They are:

(1) Protection of forest and related resources and of war industries, including power, water and transportation lines essential to their operation, against the impending danger of forest fires.

This is an immediately critical threat to our war efforts:

First, because in addition to normal forest fire hazards, sabotage by our enemies of our production of wood, our supply lines and operation of war industries through widespread setting of forest fires by aerial bombing and ground incendiarism is not only possible but probable this summer;

And, second, because adequate preparedness against such a contingency is not now assured.

The danger is particularly acute on the Pacific Coast where vital war industries are concentrated and from which our prosecution of the war in the Pacific is based.

(2) Maintenance of continuous production of wood and other forest products essential to the prosecution of the war. Most of the war industries, the training of our armed forces and the shipment of supplies and equipment to the fighting fronts of the United Nations is dependent in large part upon an uninterrupted production and delivery of wood in raw and fabricated forms.

(3) Accelerated research in the use and production of cellulose, plywood, lumber and other forest products related to war needs.

Such research will not only promote the conservation of our forest resources but it will strengthen and speed our war effort by providing improved equipment and by helping to overcome shortages in other materials that are now or may in the future impede war action.

We believe that the accomplishment of these objectives is vital to the winning of the war and that they should have the united and supreme effort of all individuals and groups in the forest field.

To this end we urge that highly controversial issues, such as federal regulation of privately owned timberlands, be set aside until the war is won, without prejudice as to their merit or desirability when normal conditions of American life are reestablished.

Along the Forest Fire Front

Forest fire lookouts are going on a twenty-four hour duty for the duration. As part of the War Department's aircraft warning service, the U. S. Forest Service, in cooperation with the various states, has been given the job of manning lookout towers at strategic points. For this purpose, $1,700,000 has been provided.

Men with previous experience as federal or state lookouts, working in three eight-hour shifts, will man each tower day and night.

Funds are lacking, however, for emergency fire fighting. After a survey of needs based on critical areas —— areas in which war industries are located —— the Forest Service estimated that from $15,000,000 to $20,000,000 would be necessary for both employment and equipment. It was hoped that these special funds might be obtained from the Office of Civilian Defense.

That source proved unavailing, however, and early in March request for a special appropriation was submitted to Congress. The request is now under consideration by the House Committee on Agriculture and Forestry.

The outlook is not believed favorable to approval of the full amount, particularly since the request as submitted to Congress was scaled down by the President to $5,000,000. This means there will be areas inadequately protected not only against normal fires but against possible sabotage fires set by the enemy.

Another question plaguing fire protection agencies is where men are to be found for protection work when money becomes available for their employment. The various forest regions have been heavily drained of employable labor and the situation is becoming more acute.

The Forest Service has resorted to the possibility of employing high school and college boys, but in some regions at least this prospect has a dark side. Only 30 of 600 college boys at the University of Montana, for example, expressed interest in forest protection work.

A further complicating factor is the wage scale now prevailing, which is much in excess of wages heretofore paid for fire fighting.

No definite action has thus far been taken to draw upon the available manpower of the CCC, although through the cooperation of Senator Charles L. McNary The American Forestry Association succeeded in having an amendment inserted in the Second War Powers Bill designed to make the CCC available to help meet the forest protection emergency.

The Bill, passed by Congress, is now before the President for signature.

Some indication of the forest sabotage danger was recently revealed on the floor of Congress. Said Oregon's Representative Mott: "On the Pacific Coast we have 250,000 Japs. All of them, whether American-born or alien, are potential enemies and potential saboteurs. I know the Japs, and what they consider the military objectives of that region. One is the timber supply of the United States.

Said Oregon's Representative Angell: "A single Jap might cause a conflagration that would involve the expenditure of millions of dollars, as well as the crippling of the great operations which are supplying the timber products going into our war effort. I understand these enemy aliens have an invention known as phosphorus paper. From a plane large quantities of it are spread over an area. Spontaneous combustion then takes place."

Photograph by Wayne Jones

I Live

By FLORA McINTYRE

I live, though harsh winds lash and twist and tear.
I live, though my roots must split the rock apart.
I live, though snows in winter bend me low.
I live, I grow;
I am a greater thing than wind or rock or snow.

(NOTE: Many travelers will recognize this Jeffery pine tree, which grows on the top of Sentinel Dome in Yosemite National Park.)

WILD RUBBER— CAN WE GET IT?

By WILLIAM T. COX

A DEPENDABLE source of crude rubber for the United Nations is of great importance at this time. With the supply of plantation rubber from British Malaya and the Netherlands East Indies shut off or seriously impaired, the procurement of rubber from other sources becomes a matter of vital concern.

Even considering the possibility of the Japanese being driven out of the Indies and Malaya within the next year, there is no way of knowing what damage has been done and may be done to the millions of acres of rich plantations. Complete replanting may be necessary and years may elapse before high rubber production is again attained.

Widely varying views have been expressed as to ways of overcoming this deficiency in the United States. Synthetic rubber offers one solution. Oil, coal and gas from which great quantities of synthetic rubber might be made are available. The time required to construct and equip the plants needed and to train the personnel for such an industry is another matter, however. It may run into several years.

In the jungles of tropical America are billions of wild rubber trees. Can they be tapped — in time?

Rubber collector's home in the Amazon Basin. The author claims unlimited amounts of high grade rubber can be produced from the wild trees of the forest

The guayule shrub can be planted on a large scale in the Southwest. This plant contains a high percentage of rubber but requires from three to four years to attain a size suitable for harvesting. So here, too, is a question as to the period that must elapse between the adoption of a large-scale planting program and the production of rubber in the amounts needed.

Leafy spurge and other rubber-containing annuals and biennials may prove to be immensely valuable as quick producers of rubber. Not enough is yet known about these plants, however. They appear promising and certainly warrant further study, but to depend largely on them would, at the moment at least, be unsafe.

The one great and certain source of crude rubber available to us is found in the rubber-producing trees now standing in the tropical forests of America. There are billions of such trees untapped between Mexico and Paraguay. The amount of rubber they could produce, it is believed in some quarters, would far exceed the East India production.

The Western Hemisphere is rich in rubber-producing trees, shrubs, vines and other plants. The Indians knew the properties of rubber long before the Spaniards and Portuguese settled South America. Orellana and other explorers found the tribes of the Amazon Basin making and using rubber gloves, boots and quivers for holding blowgun darts. Rubber balls used by the Indians in playing certain games greatly impressed the explorers.

It was not until 1875 that a serious effort was made to develop a plantation rubber industry. In that year H. A. Wickham, an enterprising English explorer, botanist and planter, who was experimenting with a small plantation on the Rio Tapajos, Brazil, was requested by Sir Joseph Hooker, director of the Kew Gardens, to obtain a quantity of fresh seed of *Hevea braziliensis*, the best of the rubber trees, and to bring the seed to England. The few thousands of little trees produced from this seed and nurtured at Kew Gardens were shipped to Ceylon at the expense of the India Office. From this relatively small beginning there was developed, in the course of about fifty years, an industry valued at hundreds of millions of dollars a year.

W. J. Lavarre

The native method of "milk bleeding" wild rubber trees calls for a pith band smoothed with soft clay around the trunk. The milk runs into a leaf cup. Modern methods should be adopted

During the years plantation rubber was coming into production in a large way the demand for rubber increased by leaps and bounds. This was due to the rise of the automotive industry. To supply this demand, wild rubber was gathered in larger and larger quantities. Production in the forests of South America might have reached great proportions had not the time come when the plantations and cheap labor of the East Indies could supply the markets at prices lower than could be successfully met by the widespread, poorly organized and sometimes badly conducted wild rubber industry.

This does not mean that the gathering of wild rubber has been or should be discontinued. The development of thousands of fur farms during the past thirty years has not adversely affected the trapping of wild fur-bearing animals. More wild fur-bearers are trapped now than ever before. Wild rubber also continues to be gathered. With proper organization the amount of crude rubber thus obtained can be enormously and quickly increased.

Not so long ago it was my good fortune, while organizing the Federal Forest Service of Brazil, to visit all of the states of that country and to see something of forest conditions in (*Continuing on page* 188)

A COMMERCIAL BLACK WALNUT VENTURE

By

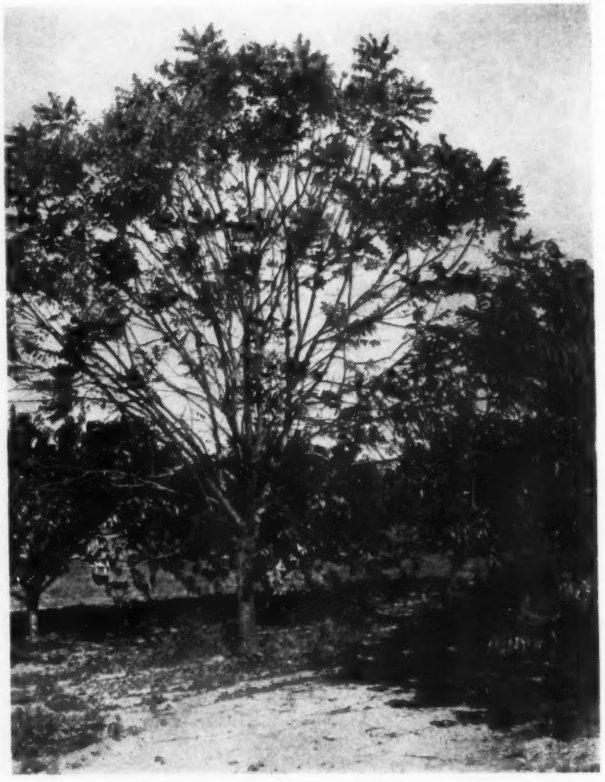
H. GLEASON MATTOON

THE black walnut tree which is native to the eastern half of the United States has suffered too long from a whispering campaign against its social qualities. There have been lengthy discussions which purport to prove that some toxic quality of its roots, fruit, or leaves weakens or kills alfalfa, soy beans, apple and peach trees, and other plant species growing in close proximity. Frankly, I am skeptical. I believe faulty deductions have resulted in erroneous conclusions. This skepticism, shared by my associates, is based upon ten years of experience with a thirty-five-acre orchard of improved black walnuts.

In the spring of 1932, six hundred trees of budded black walnuts of four varieties — Thomas, Ohio, Stabler and Ten Eyck — were planted in Maryland on fifty-foot centers in a sassafras, sandy loam soil. Because of the wide spacing much of the soil area would not be used by the trees for several years, so, being ignorant of the superstitions, soy beans were planted between the tree rows. This immediately brought forth predictions of failure. The fact that 600 bushels of beans were harvested from those thirty-five acres that year never was explained by some. Furthermore, soy beans were grown with satisfactory results the following two years. Then the trees spread so much that the harvesting machine could not do an efficient job.

Still there was much unused space between the trees so we decided to interplant with peaches, putting two peach trees between every two walnuts with a solid row of peaches sixteen and two-thirds feet apart between the walnut rows. Again we were warned. Peaches and walnuts are not compatible, we were told. As soon as a walnut root touched a peach root the latter tree would either cease to grow or curl up its roots and die.

Fortunately, the peach trees had been delivered and planting had started before we heard these dire forebodings. This was in 1935, and for two years we spent some bad nights picturing those peach roots reaching out through the dark, subterranean soil passages and suddenly receiving a lethal dose from a walnut root lurking around the corner.



The theory that peach trees will not grow near black walnuts is shattered here. The walnut is a Ten Eyck

Strangely, however, the peaches grew, and produced crops from the third year on. During the season of 1941, not only were the roots of the two species interlaced but the branches as well, yet the set of peaches was so great that more than half had to be removed in thinning operations.

At one end, the walnut grove joins an apple orchard on the edge of which stands a massive wild walnut tree. The limbs of this giant tower over two of the apple trees. For curiosity's sake, we investigated the root structure of this large walnut and found that roots of all sizes were intertwined with

apple roots and very likely had been for at least fifteen years. Yet the Stayman trees are healthy and bearing well. We have never attempted to grow alfalfa under walnuts, but with these experiences we shall hold to our skepticism concerning the toxicity of the walnut.

The purpose in planting improved walnut trees is obviously to grow better walnuts to sell at higher prices than could be had for the common wild nuts. Soy beans and peaches were grown to get some financial return from the land before the walnuts came into commercial bearing. The walnut trees have now completed their tenth growing season and have developed from whips four feet tall into trees twenty or more feet in height. While some have grown more rapidly than others, the trunks will average nearly seven inches in diameter. One tree at breast height is thirty inches in circumference, while many measure from twenty-two to twenty-seven inches. Their growth has been more than twice as rapid as that of well cared for apple trees. This may be due to several factors.

In laying out the orchard we chose a deep, light soil of reasonable fertility, such a soil as would produce a good crop of corn if properly fertilized. This location was chosen because we wanted the commercial venture to succeed and could scarcely expect it to on a poor site.

We bought vigorous trees—trees that had grown at least four feet in one year from budding. Variation unquestionably exists in the inherent qualities of growth, resistance to disease and fruitfulness among individual trees in a nursery row. We know too little about the transfer of these qualities and have done less to select stock along these lines, but it is usually true that a tree that grows rapidly the first year will be superior to a runt.

Because of intercropping, the walnut orchard also was cultivated. In preparing the seed bed for soy beans, the soil was thoroughly disked which left a deep soil mulch around the trees, ideal for rapid root development. During the last few years since the peach trees have attained size, disking is done between rows in the spring. From June on, a cover crop of weeds is allowed to grow. This remains over winter. The cost of soil preparation for soy beans was charged to the bean crop, yet it had a beneficial effect upon the growth of the walnuts. Likewise, cultivation during the years the peach trees remain in the orchard is charged to the peach crop notwithstanding the value of soil tillage upon the walnuts. In addition to this care, the walnuts were lightly fertilized each year from 1933 through 1937, two pounds of a 4-8-8 mixture given to each tree. The cost of this fertilizer plus the application was charged to the walnut grove.

It may be we have erred in laying stress on rapid growth. Time alone will tell. Our desire has been, however, to develop trees with large crowns as rapidly as possible without sacrificing strength. The expecta-

The Ten Eyck, shown with peach interplants, develops slowly into a compact, symmetrical tree, producing walnuts after fifth year. This tree is ten years old

tion is that the larger the tree the more nuts it might bear. So far, little storm breakage has occurred on trees except those attacked by a nectria canker. This disease has injured about ten per cent of the Thomas variety. None of the others have as yet been attacked.

Variation in yield among the varieties has been pronounced. Many of the Ohio trees started to bear in 1933, their second growing season. Some produced a peck of nuts by 1936 while one bore a half bushel that year. In addition to this precociousness, the Ohio trees have borne more or less regularly each year. This is a quality that should not be ignored in a commercial venture.

Next to come into bearing was the Thomas. While it followed the general yield pattern of the Ohio, it was two years later in starting. Moreover, the average yield of the trees of this variety has not equalled that of the Ohio. Also, the trees have more of a tendency toward biennial bearing.

The Stabler has been a disappointment. From 150 trees the greatest crop has been two bushels. They have made less growth than the others and are less attractive. Perhaps with ten more years of growth the Stabler will equal or excel other varieties. Delayed fruiting, however, is a drawback to the commercial nut grower as it is to the apple grower.

The Ten Eyck has fewer supporters than have the other three varieties, nor were we enthusiastic about it until recently. It developed slowly, although by 1937 these trees were the most attractive of all, being

This Ohio tree, interplanted with soy beans, produced two walnuts the same year it was set out

compact, symmetrical and round-headed. The first nuts were produced during its fifth growing season. Since that time the Ten Eyck has borne regularly but not heavily. In 1941 the yield had increased to about a half peck of hulled nuts per tree. These nuts are not large but they crack easily. Our enthusiasm for the variety is based upon the conformation of the tree and the regularity of yield.

The Ten Eyck has its drawbacks but it should not be ignored. While the yield of nuts so far has been much smaller than we had hoped for, it has been sufficient each year since 1937 to warrant marketing. Ignoring the Stabler variety the crop has increased each year except the last, when a long, rainy period reduced pollination. Of sixty bushels produced in 1937, eighty per cent was from Ohio trees. Each year since then this variety has led with Thomas second, until 1940 when Ten Eyck took its place. In 1941 Ohio again led, with Ten Eyck second.

Walnuts, like other trees, have their troubles, but in number and severity of attack they are minor compared to the enemies of (*Continuing on page* 191)

The Ohio tree is well suited for commercial walnut growing, producing regularly after second season

EDITORIAL

THE WAR JOB FOR FORESTERS

IN 1942 American foresters and lumbermen face the toughest protection job of our generation. This is the menace of forest fires systematically planned and executed by the same sort of diabolical genius that directed the blitzkrieg in Poland and the attack on Pearl Harbor.

It may come on the West Coast in an effort to create a huge smoke screen concealing forces attacking from the Pacific. It may come on the East Coast or the Gulf Coast as a phase of military strategy. It may be attempted in many parts of the United States—as a means of diverting man power, interfering with transportation, causing terror and confusion or simply exhausting natural resources. It may come by attack from the air, through the terribly efficient incendiary bomb; or it may come from organized sabotage within the United States.

However it comes, it will call for all that the forest protection agencies of this country have in alertness, resourcefulness and unity to meet the alien,—forest fire—wherever it appears.

If anyone thinks this is a piece of war hysteria, let me suggest that the lesson of Pearl Harbor be not forgotten. We cannot take the chance of failure to be ready to defend our forests.

The first requirement, in this call for forest defense, is preparation for unified action. In the Pacific Northwest, we have set up a Forest Defense Council in each State. We will have one head, a forest fire general of all defense organizations—in case of emergency. We will pool equipment and man power under a single boss, whenever the emergency breaks. There will be intensified organization of fire guards, patrolmen and law-enforcement officers. There will be three lines of defense for the fires that get away:

First, organized, paid suppression crews, with their own trucks and equipment, waiting at strategic points to go into action; second, equipped fire-fighting crews at logging camps, construction camps and other local sources of man power, furnished on call, under agreements in advance; third, designated units of the United States Army, available when needed and at least partially instructed in fire fighting.

The Keep Oregon Green and Keep Washington Green organizations will get into action, in the early spring, with vigorous campaigns of public education and warning. We want to create a far more aggressive attitude in the Pacific Northwest toward the incendiary fire and the careless fire than we have ever had before. Every fire in 1942 will be an enemy fire; and putting it out will be backing up—in our own woods—the American Army and Navy in the Pacific.

The best we can do—in all these ways—will be none too effective in the kind of emergency for which we are preparing. We have no delusions as to what confronts us in our midsummer periods of dry, hot weather. It is going to take all that we have—federal services, state services, protection organizations, logging companies, ranchers, people at summer camps, all the folk in the woods. And, of course, it is a job not only for 1942. It is for the duration of the war.

One of the things we most need to make a cohesive, fighting force out of all these groups and agencies is unity. In the face of this compelling duty to American forests, we should bury all our hatchets. We hold diverse convictions on important phases of American forestry. Some of us believe in maximum opportunity for private enterprise in timber growing or private enterprise within the regulatory sphere of the state. Others believe that the success of American forestry rests mainly upon federal regulation and the extension of federal ownership.

We should all have learned by now that we cannot win this war and at the same time continue "business as usual" or politics as usual or controversies over peacetime concerns as usual. Our greatest need to win the war is unity; and this goes for foresters in their immediate job just as much as for any other groups of Americans—in their immediate jobs. The men in forest industry should not be compelled to devote time and energy to maintain an internal fight for what we regard as one of the essential freedoms which the United States is striving to preserve—freedom for free enterprise and initiative.

Every one of us is under orders of our Commander-in-Chief. We will carry out those orders implicitly; but this is no time to create disunity by debating post-war economics. Our first job is to win the war.

Whether a policy of Federal forest regulation is right or wrong is beside the point. We have a far more urgent task on our hands, *right now*. The most perfect scheme of totalitarian forestry ever devised will avail little if the forests to which it applies are burnt out by war.

It is my earnest plea that we do the first job first. We look to the United States Forest Service for leadership in an all-out protective effort. Let us first carry American forests through their critical hazard by the most unified cooperation of which we are capable. And then settle the questions of their future.

YOUR SHADE TREES -- TREE SUICIDE

By P. P. PIRONE

MANY trees commit suicide by self-strangulation. During this process, the roots grow in such a way as to cut off or choke the parts surrounded, restricting the movement of nutrients much as does a wire left around a branch or trunk for a number of years. *Girdling root* is the term used by arborists to describe this type of growth.

Demonstrable suicide by a large girdling root at the base of the tree trunk

The retardation of sap flow resulting from girdling roots also may cause the bark above the constricted area to die, and in time a trunk cavity will develop because of the loss of the protective live bark.

Trees with girdling roots do not, as a rule, die suddenly but, despite good pruning and fertilizing practices, become progressively weaker over a five- or ten-year period.

Suicide is more common among trees growing along city streets than among those in the country. This process, according to Dr. E. P. Felt, well known authority on trees, may be taking place to a greater or less degree on seventy-five to ninety per cent of the trees along certain streets.

Girdling roots are more destructive on trees growing in heavy compacted soils than on trees in sandier soils, and on middle-aged or old trees than on younger ones. Fruit trees are more subject to self-strangulation than are nut-bearers, and softwood trees more than hardwoods. A well-known commercial arborist estimates that forty per cent of all ailing trees are directly or indirectly affected by retarded sap flow.

Trees do not commit "hara-kiri" of their own accord. Nearby soil and environmental conditions and carelessness at transplanting time are mainly responsible.

Tree roots are deflected from their normal course in the soil by unfavorable environmental conditions. They grow most rapidly in areas where air, moisture, and food supply are best. When young trees, for instance, are planted along city streets, their roots are spread out in wheel-and-spoke design by the planter. For several years, the roots grow in the general direction in which they were originally placed. Soon, however, the young roots begin to turn away from the street side, where air and moisture are lacking, toward open soil areas between the curb and sidewalk and toward lawns. In the course of bending, the younger roots cross over older ones, in some instances running close to the base of the main trunk. Such roots grow and expand rapidly because of the more favorable conditions and eventually become attached by pressure to the roots they cross, or to the trunk base that they touch, as shown in the first illustration.

Besides the natural tendency of roots to grow toward favorable growing areas, a number of other factors may further the development of girdling roots. When

Attacking the attacker by cutting and removing the girdling root — saving the tree from itself

street trees, for example, are planted in holes filled with good soil and surrounded by hard impervious sub-soil, the roots are unable to penetrate the more unfavorable soil and are thus forced to crowd one another within the filled area.

Careless placement or overcrowding of the roots at transplanting time may result not only in the formation of girdling roots but also in decay of the root crown. The latter condition was noted by Dr. H. H. York, of the University of Pennsylvania, on red, white, and Scotch pines in reforestation projects. He found a direct relation between careless placement of roots and the amount of subsequent infection in the root crown by fungi and bacteria. As roots become twisted, air and water pockets form which make ideal breeding places for organisms that produce root crown-rot.

Fertilizing soil in the immediate vicinity of young street trees may stimulate new root growth, produce overcrowding, and eventually result in the formation of girdling roots.

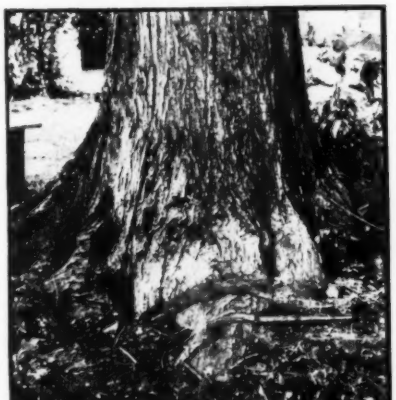
Most girdling roots on shade and ornamental trees are not so obvious as those shown in the accompanying illustrations. In fact, most of them develop below the soil line, their presence being detected primarily by removal of the soil around the trunk. Several above-ground symptoms, however, can be used to detect them. These symptoms are best observed in late fall before frost, when the side of the tree over the girdled area shows lighter green leaves that tend to fall earlier than they normally would. The dying of large limbs on the lower parts of the crown, due to the retardation of sap and nutrient flow, may also indicate the presence of girdling roots. Death of branch leaders in the top of the trees likewise may result from girdling roots. One must always bear in mind, however, that other factors may produce similar symptoms and that the most positive sign is the actual uncovering of the girdling root. This can be accomplished by carefully removing the soil around the trunk on the side showing weak top growth, poor bark development, or a pronounced swelling at the base of the trunk. Usually the girdling root is to be found at or a few feet below the soil surface, though it may be deeper if the tap root is being strangled.

To prevent overcrowding and consequent twisting and bending of roots, the holes in which young trees are planted should be considerably larger than is necessary barely to hold the roots. The roots should be carefully spread out so that they do not cross over one another or bend in toward the trunk.

The soil around newly planted trees should be cultivated from time to time during the first few years. This practice keeps it loose and friable and helps the roots to spread out normally and away from the trunk. Fertilizers should not be placed within two feet of the trunk.

Well-formed girdling roots on older trees require surgical treatment. If the strangling root has not yet seriously impaired the tree's vigor, complete recovery is effected in many instances by severing the root with a chisel and mallet at its point of attachment to the trunk or to the large lateral roots. If the cut root cannot then be pulled out of the ground,

The girdling root at its deadly work, attached to the base of the trunk



Only the shadow of the strangler remains, and normal movement of nutrients in the bark is no longer retarded

a few inches should be cut away from the severed end to prevent its reuniting with the member from which it was severed. Then the cut surfaces on the trunk or main root and on the girdling root itself should be painted to prevent insect and fungus invasion. Finally the soil should be replaced in its original position. If the tree has been considerably weakened, judicious pruning of the top and insertion of some good fertilizer into the soil will help bring it back to its normal condition.

THE QUERY CORNER

Q.—Kindly advise me what spraying practices are necessary for mountain ash (four year) which are planted in an orchard effect for ornamental purposes. They are also planted for benefit of birds that eat seeds, etc.—*Clyde B. Plessinger,* Clearfield, Pa.

A.—Mountain ash is very susceptible to the bacterial disease known as "fire blight." Certain pests such as pear leaf blister mite and bark borers, in addition, make it difficult to maintain this highly prized ornamental tree in good health for very long. For fire blight control, prune all dead branches to sound wood and spray when most of the blossoms are fully opened with bordeaux mixture 1-3-50, or with dilute solutions of any good ready-made copper fungicide. For leaf blister mite spray in late fall or early spring with one part concentrated lime sulfur in ten parts of water. No simple control for borers is known. Crushing the borers by inserting a flexible wire into the tunnel openings, or killing them by injecting carbon bisulfide or nicotine paste into the tunnels and sealing the openings, are feasible where only a few trees are involved.

Q.—I have a big American elm tree in my yard, with which I have had considerable trouble during the last four years. Starting in about the first of May, the leaves fall and I get about a half bushel of leaves every day, which are a nuisance and spoil the whole appearance of my lot. Can you tell me what is wrong with the tree?—*Karl E. Vogel,* Omaha, Nebraska.

A.—Defoliation of your elm is largely caused by infestations of elm leaf beetle. The adults are brownish-yellow insects, one-fourth inch long and the larvae are black grubs with yellow markings. Spray with three pounds of arsenate of lead and one-half pint of fish oil in fifty gallons of water, after the leaves are partly out, and again about three weeks later. In addition to spraying, the tree should be fertilized according to standard practices early this spring.

QUESTION: How deep should black walnuts and shell bark hickory nuts be planted?—J. F. P., Missouri.

ANSWER: Ordinarily, these nuts should be planted about two inches deep. Some authorities in Kansas and Nebraska recommend the ground be well graded and tilled, with furrows four inches deep at thirty inch intervals. Water can then be permitted to flow through the furrows until the soil is thoroughly saturated. Soon after, the walnuts or hickory nuts can be sowed in the moist furrows and covered to a depth of one or two inches. The ground should be cultivated afterward.

YELLOW BIRCH

***Betula lutea*, Michaux**

BY G. H. COLLINGWOOD

A LUSTROUS, silvery yellow bark on limbs and young trunks makes yellow birch easy to identify. Except on very young trees, the bark peels into thin, papery strips that give a ragged appearance. Marked by horizontal lenticels or pores, the bark on old trunks is gray or blackish, deeply and irregularly grooved and about one-half inch thick.

Often attaining large size, the straight, slender trunk and oval crown are characteristic of the forest-grown yellow birch

Yellow birch grows in mixture with beech, maple, ash, red and white pine, spruce and balsam fir. Second growth forests sometimes contain limited areas of pure yellow birch, with straight, gleaming trunks.

In the open, trunks are usually short and divide into numerous large ascending limbs with slender, somewhat pendulous branchlets that form a broad open head. Under forest conditions trunks are tall and clear of limbs. Mature trees average sixty to seventy feet in height with trunks two or three feet in diameter. On preferred sites trees reach ninety or a hundred feet in height with trunk diameters of four feet.

The range of yellow birch extends from Newfoundland, Nova Scotia and the north shore of the Gulf of St. Lawrence west across Minnesota and eastern Iowa, and southward along the mountains to Georgia. A tree of rich, moist woodlands, its preferred sites are val-

Devereux Butcher

During the winter, before developing into pendent catkins, the staminate aments are shiny chestnut-brown, and about three-quarters to an inch long

Devereux Butcher

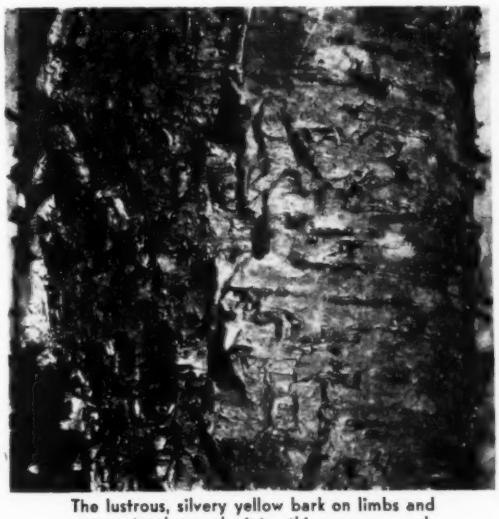
Each scale of the cone-like fruit contains three winged seeds. Seeds and scales drop away in autumn leaving a central, erect core on the twig

leys and stream banks, although it adapts itself to higher ground, as in the mountains of New England where it reaches elevations of 3,000 feet. It is most abundant and largest in Canada, northern New England, northern New York and northern Michigan.

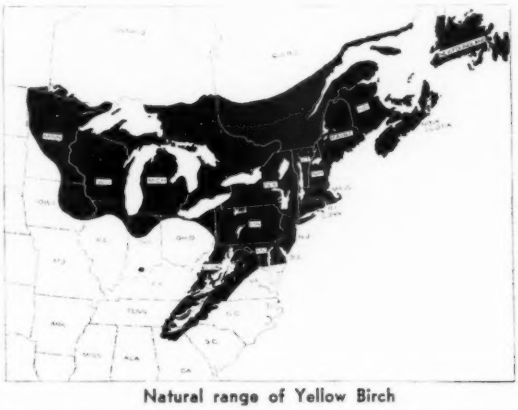
The twigs resemble those of black birch, but lack the strong wintergreen flavor of the latter. They are green and hairy at first, turning light orange-brown during the first summer, later becoming smooth and dark. Covered with three to eight scales which are downy on the margins, the winter buds are found only along the sides of the twigs—the terminal bud being absent. At the tips of the twigs the pendent staminate or pollen-bearing catkins are borne in clusters of two to four. At the sides of the twigs the solitary, stemless pistillate or seed-producing flowers appear, and by autumn develop into scaly seed-bearing cones about an inch in length.

Attached by short, grooved stems, the leaves are pointed, with sharply double-toothed margins, and have a wedge- or rarely heart-shaped base. Dull dark green above, they are yellow-green beneath with hairs on the veins, and measure three to four inches long and one and a half to two inches wide.

Yellow birch wood weighs forty pounds to the cubic foot when dry. It is hard, strong, and takes a satiny polish. Heartwood is light brown tinged with red, and the sapwood nearly white. Most abundant of all North American birches, it furnished the bulk of 140,738,000 board feet of lumber produced in 1939. It is used for furniture, packing boxes, button molds, wheel hubs, flooring, veneer, interior finish, woodenware, agricultural implements and many other purposes. Areas of greatest commercial abundance are Wisconsin, northern Michigan, New England, and New York.



The lustrous, silvery yellow bark on limbs and young trunks peels into thin papery curls



Natural range of Yellow Birch

TREES BUILD MEN

(*Continued from page* 160)

soon. They eat well, gain weight, have more freedom than in a cell, and are more likely to be contented.

"My biggest job is to train these prisoners to run the barracks. We have to have gardeners, cooks, clerks, carpenters, flunkies, in fact, help of all kinds. The prison at Waupun doesn't hand pick the men for these different jobs. That's why I'm sometimes up against it cultivating a twenty-five-acre garden and harvesting almost a thousand quarts of strawberries when they get ripe.

"If I'm short of a cook, chances are I have to make one out of a prisoner who was a plumber or a horse doctor before he got sent up. Most of the time, though, they train easy. They sort of like the idea of having responsibility in keeping this place going.

"It's surprising how many different kinds of men we get. We have bankers, lawyers, mechanics, ditch diggers, farmers, railroad section hands, and now and then a deacon. It's a mixed up lot if there ever was one."

The prison camps at McNaughton and Athelstane do not have nurseries as large as the one at Gordon, but tree production is the main activity. At McNaughton prisoners operate a shingle mill and a saw mill. The lumber they saw is dragged out of the lake there or is fallen timber that is cut out of the woods to protect the growing forests.

In addition, the McNaughton camp has a project for making fertilizer in block form for use in stimulating the growth of trees, particularly in public parks.

Since 1924, an aggregate of 5,968 men has been placed outside the state prison walls on the honor system. Because forestry camps were not established until 1931, the number sent to them is not as great as that employed on farms near the prison. The camps, nevertheless, have taken care of hundreds of prisoners.

"The number at any one camp varies from week to week," explains Warden Burke, "because several may be released and not be replaced for a week or two. Last week, for instance, we had seventy-six prisoners at Gordon, sixty at McNaughton, and fifty at Athelstane. Next week these figures will undoubtedly be more or less, depending upon circumstances. This turnover means that each camp actually accommodates in a year's time more prisoners than its daily or weekly capacity indicates."

There can be no question but that the camp idea has done a lot to rehabilitate prisoners. The state prison itself has a strict disciplinary system where men at best live under rather unnatural conditions. Taking a man out of prison, especially after he has been there long years, and turning him out into society often is quite a shock to him. The camp therefore is a sort of weaning off place where some of the privileges that were denied to men in the institution are gradually returned to them.

In the camps there is more liberty, there is more contact with outside people, and the man gradually becomes acquainted with what outside normal life is like. After a time in the camp he becomes a more fit subject for return to society because of the experience he has had there. A reduction in the number of recidivists is one of the outstanding benefits of the camp experience. This means a lessening of crime, and a reduction in the cost of caring for repeaters.

Prisoners, as a rule, consider it a privilege to complete the final period of their sentences in the camps. Generally speaking, first offenders are given preference over others for camp assignment. On the other hand, Warden Burke does not hesitate to give second offenders a chance in camp if he feels there is a possibility of rehabilitation and there is indication they will not go to camp merely to effect an easy escape.

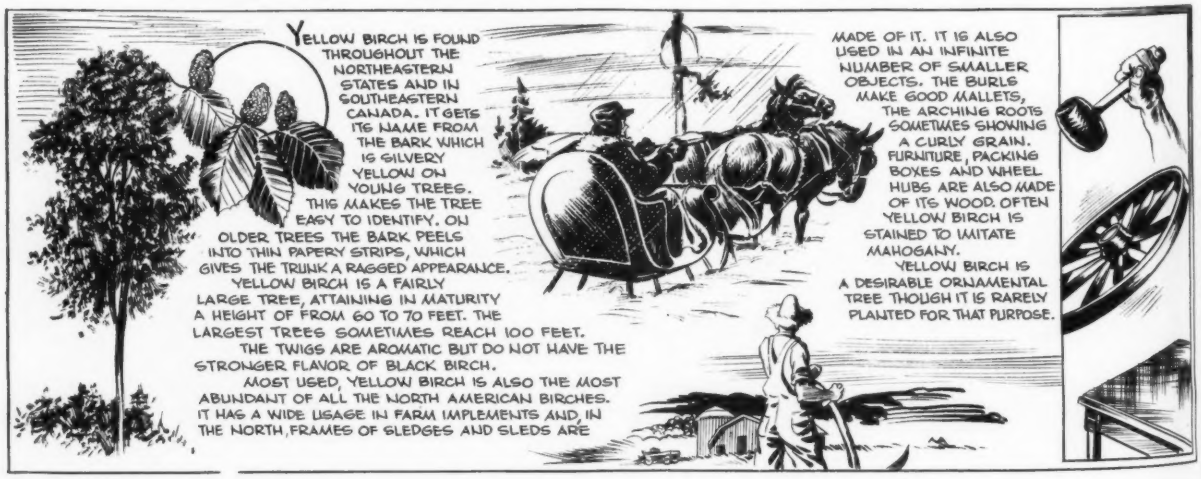
Despite the fact that it is an easy matter for prisoners to walk away from any of the nursery sites, only 106 men have escaped from the camps and farms since 1924. Of this number, all but twenty-six have been returned. During the period, July 1, 1938, to June 30, 1940, 2,128 prisoners were placed outside the walls and just twenty-two escaped, or 1.03 per cent.

Realizing that success of the honor system hinges somewhat on the capture of escaped prisoners, the authorities exert every effort to apprehend them and charge them for such escape. If leniency and laxity were shown, the prison heads feel that it would not be long before the morale of the system would decrease.

It has long been recognized that society would some day have to throw overboard outmoded punishment theories and replace them with methods that take into account the causes, consequences and cures of crime, with emphasis upon rehabilitation. In adopting the forestry camp idea, Wisconsin has taken a big step in this direction.

The nation needs trees, must have them because the defense program is bound to reduce the future supply. The nation, too, can do with less crime and fewer repeaters. It would be well if the Wisconsin idea were adopted on a national scale.

TREES AND THEIR USES—No. 64—YELLOW BIRCH


YELLOW BIRCH IS FOUND THROUGHOUT THE NORTHEASTERN STATES AND IN SOUTHEASTERN CANADA. IT GETS ITS NAME FROM THE BARK WHICH IS SILVERY YELLOW ON YOUNG TREES. THIS MAKES THE TREE EASY TO IDENTIFY. ON OLDER TREES THE BARK PEELS INTO THIN PAPERY STRIPS, WHICH GIVES THE TRUNK A RAGGED APPEARANCE.
YELLOW BIRCH IS A FAIRLY LARGE TREE, ATTAINING IN MATURITY A HEIGHT OF FROM 60 TO 70 FEET. THE LARGEST TREES SOMETIMES REACH 100 FEET.
THE TWIGS ARE AROMATIC BUT DO NOT HAVE THE STRONGER FLAVOR OF BLACK BIRCH.
MOST USED, YELLOW BIRCH IS ALSO THE MOST ABUNDANT OF ALL THE NORTH AMERICAN BIRCHES. IT HAS A WIDE USAGE IN FARM IMPLEMENTS AND, IN THE NORTH, FRAMES OF SLEDGES AND SLEDS ARE MADE OF IT. IT IS ALSO USED IN AN INFINITE NUMBER OF SMALLER OBJECTS. THE BURLS MAKE GOOD MALLETS, THE ARCHING ROOTS SOMETIMES SHOWING A CURLY GRAIN. FURNITURE, PACKING BOXES AND WHEEL HUBS ARE ALSO MADE OF ITS WOOD. OFTEN YELLOW BIRCH IS STAINED TO IMITATE MAHOGANY.
YELLOW BIRCH IS A DESIRABLE ORNAMENTAL TREE THOUGH IT IS RARELY PLANTED FOR THAT PURPOSE.

100,000 ACRES ADDED TO NATIONAL FORESTS

Purchase by the federal government of 101,572 acres of land for national forest purposes was approved on March 5 by the National Forest Reservation Commission.

The purchases involved 463 different tracts in twenty-five states, at a total cost of $491,026. Lands to be purchased will be added to national forests and purchase units under administration of the U. S. Forest Service. Most of the lands include cut-over or burned-over areas on which the Forest Service will undertake protection and rehabilitation work looking to restoration of timber growing and watershed protection values.

Of the purchases approved, 90,590 acres are to be acquired from regular appropriations under the Weeks Law at a cost of $448,273; and 10,982 acres costing $42,753 will be purchased under special acts of Congress authorizing the use of national forest receipt funds, the counties involved having voluntarily surrendered their share of annual forest receipts in order to speed the extension of public ownership to include local critical watershed areas.

Largest purchases were in the Jefferson National Forest, Virginia, 5,471 acres; Ocala National Forest, Florida, 7,615 acres; Mark Twain and Clark National Forests, Missouri, 6,544 and 11,466 acres respectively; Ottawa National Forest, Michigan, 8,861 acres; and Tahoe National Forest, Nevada, 9,094 acres. The Nevada purchase includes sixty-four acres of shore frontage on Lake Tahoe, which will afford the public access to the lake free from restrictions and charges incident to private ownership.

A purchase of seventy-nine acres in the Nantahala National Forest, North Carolina, brings under public administration a tract of private land within a federal-state cooperative game management unit previously established.

The purchase of 473 acres in the so-called Nerstrand Woods, a remnant of the "Big Woods" which figured prominently in the early history of Minnesota, looks to eventual exchange of that area for state-owned land within established national forests in Minnesota, which will enable the state to preserve this historic area and at the same time will aid the consolidation of public ownership in the national forests. A purchase of 237 acres in the Au Sable area, Michigan, will permit similar exchanges in that state.

The Commission also approved a number of land exchanges under which the United States will receive lands from private owners within the boundaries of national forest units in exchange for government-owned lands or timber.

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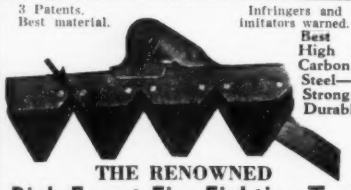

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MEMORIAL FOREST TO JOHN WINGATE WEEKS

By C. S. HERR

THE New Hampshire Legislature at its recent biennial session voted to accept the Mt. Prospect property at Lancaster, New Hampshire, as a memorial forest park to the late John Wingate Weeks, author of the Weeks Law. Mr. Weeks was born in Lancaster in 1860. He never lost interest in the land of his fathers and returned to it often. It was here at Mt. Prospect, on the morning of July 12, 1926, that Mr. Weeks died.

This mountain, so closely associated with the later years of his life, has now become a Memorial Forest Park which will exist as a living monument to him throughout the ages. This gift was made by his heirs, the Honorable Sinclair Weeks of Newton, Massachusetts, and Mrs. John W. Davidge of Washington, D. C.

Mr. Weeks built a stone lodge and forty-foot observation tower on the top of Mt. Prospect, 2,000 feet above sea level, in 1912. The view from this tower is superb. To the east and south lie the majestic Presidential and Franconia ranges, the northern slopes of which lie within the White Mountain National Forest, purchased under the law bearing his name.

Mt. Prospect is well covered with forest growth and the top can be reached by a gravel road. It was here that Mr. Weeks found rest and recreation from his strenuous work as a member of Congress and later as Secretary of War. During the summer of 1920, he entertained President Harding at the Mt. Prospect lodge.

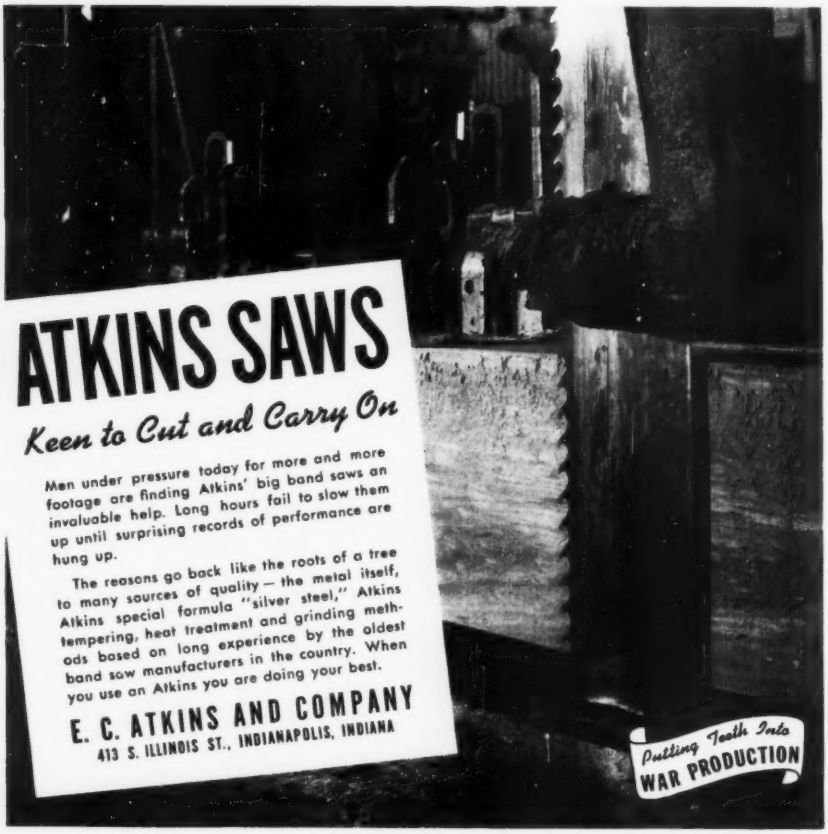
This excellent forest property of 110 acres, together with the lodge and tower,

Tower on Mt. Prospect

are now being managed by the New Hampshire Forestry and Recreation Commission as a forest park and it is open to the public. The main lodge is maintained in its original condition as far as possible. The large club room on the second floor, with its library and excellent view, can be enjoyed by those unable to climb to the top of the observation tower. The first floor will ultimately be converted into a forest museum, which will outline the history of the lumbering industry in New Hampshire.

The tower, through the addition of a fifteen-foot extension, has been converted into a forest fire lookout station. The change has been made without destroying the original outline of the structure. Outdoor fireplaces and picnic tables, together with games of various kinds, are available for those who use the reservation.

The Mt. Prospect Memorial Forest Park is a fitting memorial to one of the great leaders in American conservation.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CONSERVATION IN CONGRESS

DRASTIC reductions in the President's budget estimates for forestry and conservation activities of the Department of Agriculture were made by the House Committee on Appropriations in reporting H. R. 6709, the 1943 fiscal year Agriculture Appropriation Bill. Later agreed to by the House, most serious decreases were made in items providing control of tree insects and diseases. Dutch elm disease eradication suffered a cut of $100,000 to a total of $365,475. Gypsy and brown-tail moth control was cut $75,000 to a total of $382,570. These reductions amounted to refusal of the Committee to approve funds formerly available from the WPA. Estimates for these two activities remain practically the same as in the current fiscal year, but with curtailment of WPA, control activities will probably suffer from too meagre appropriations. In addition, the item for forest insects studies was reduced $20,500.

The budget estimate for white pine blister rust control was cut $25,000 to a total of $1,949,000. The entire reduction applies to the allotment for control on state and private lands, under the jurisdiction of the Bureau of Entomology and Plant Quarantine.

Forest Service Budget Cut

Of $124,930 slashed by the Committee from estimates for regular Forest Service activities, the most serious was reduction of the Forest Survey item by $47,371 to a total of $202,629. Other reductions include forest products research, cut $16,260 to an even $1,000,000; general administration, reduced $6,000 to a total of $573,000; national forest protection and management, reduced $16,649 to $11,266,446; water rights, cut from $20,000 to $10,000; forest management research, cut $10,000 to a total of $556,500; forest economics, reduced $14,000 to $119,000; and forest influences, cut $4,650 to $124,350.

As compared with these reductions, the Committee added $15,000 to the forest pathology item, earmarked for "sap-stain control studies." Shortage of critical war industry chemicals, such as chlorine, mercury and phenols, from which most successful sap-stain control solutions are made, necessitates research for non-critical substitutes. The item for operation of the Soil Conservation Service was reduced $105,000 to a total of $22,402,204.

$700,000 for Farm Forestry

While the $700,000 estimate for cooperative farm forestry was left intact, the Committee, in its report, said, "The Budget proposal is to allot $300,000 of this fund to the so-called shelterbelt project. It is believed that the Norris-Doxey Act was passed by Congress with the thought in mind that the appropriations to implement it should be allotted among the several states in some equitable ratio, such as one based on the total farm acreage in each of such states adapted to forestry. Of the total appropriation of $700,000, but $551,100 is allotted to the Norris-Doxey Act, and more than half of the latter sum—namely, $300,000—is set up by the Budget for expenditure on the shelterbelt project. The committee disapproves of such a patently unfair and unwise distribution of this fund."

Emergency Fire Fighting

With the 1942 forest fire season already under way, long-promised emergency funds are not yet available. None of the $57,000,000 ear-marked for "emergency fire fighting," as contained in the First Deficiency Appropriation Act, H. R. 6548, approved by the President February 21, now Public Law 463, will be available for forest fire fighting. On March 10, the President submitted to Congress a $5,000,000 supplemental estimate of appropriations for emergency forest fire control on federal, state and private forest lands, to be available immediately upon approval and until June 30, 1943. It it understood that a large share of these funds will be available for emergency fire control on state and private forest lands. However, equal matching of funds will be required by states and private forest land owners. Available through the Department of Agriculture, these funds will supplement Clarke-McNary cooperation on state and private lands which is estimated at $2,500,000 for 1943. In addition, an $812,000 estimate for emergency forest fire protection on lands under the jurisdiction of the Department of the Interior was sent to Congress March 17. If approved, these funds will be used on areas of strategic importance to war industries within a 300-mile zone on the East and West Coasts of the United States.

$4,200,000 for Guayule

Guayule rubber production, as provided for in S. 2282, approved by the President on March 5, and now Public Law 473, has been assigned to the U. S. Forest Service. Operations have already begun using the President's emergency funds. House Document 663 of March 11, contains a Presidential request to Congress for appropriation of $4,200,000 for guayule production.

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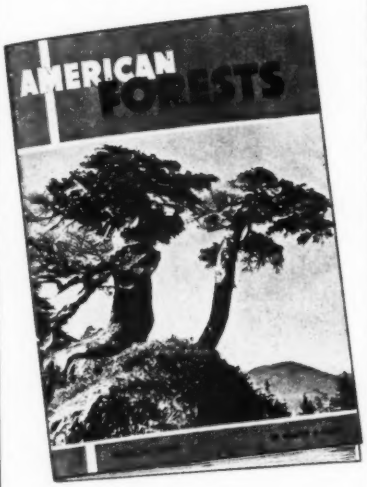

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CONSERVATION CALENDAR

Important Bills in Congress with Action February 18 to March 11, 1942

BILLS ENACTED

S. 2282—Downey—To provide for the planting of guayule and other rubber-bearing plants and to make available a source of crude rubber for emergency and defense uses. Introduced February 17, 1942. Passed Senate February 19, 1942. Passed House February 28, 1942. Signed by the President March 5, 1942. Public Law No. 473.

H. R. 3014—To accept the cession by the State of Michigan to exclusive jurisdiction over the lands embraced within the Isle Royale National Park. Passed House August 5, 1941. Passed Senate February 26, 1942. Signed by the President March 6, 1942. Public Law No. 478.

H. R. 4336—To accept the cession by the State of Washington of exclusive jurisdiction over the lands embraced within the Olympic National Park. Passed House August 4, 1941. Passed Senate February 26, 1942. Signed by the President March 6, 1942. Public Law No. 479.

H. R. 4386—To provide for the addition of certain lands to the Isle Royale National Park. Passed House August 4, 1941. Passed Senate February 26, 1942. Signed by the President March 6, 1942. Public Law No. 480.

H. R. 6548—First Deficiency Appropriation bill for the fiscal year ending June 30, 1942. Passed House February 9, 1942. Passed Senate amended February 17, 1942. Signed by the President February 21, 1942. Public Law No. 463.

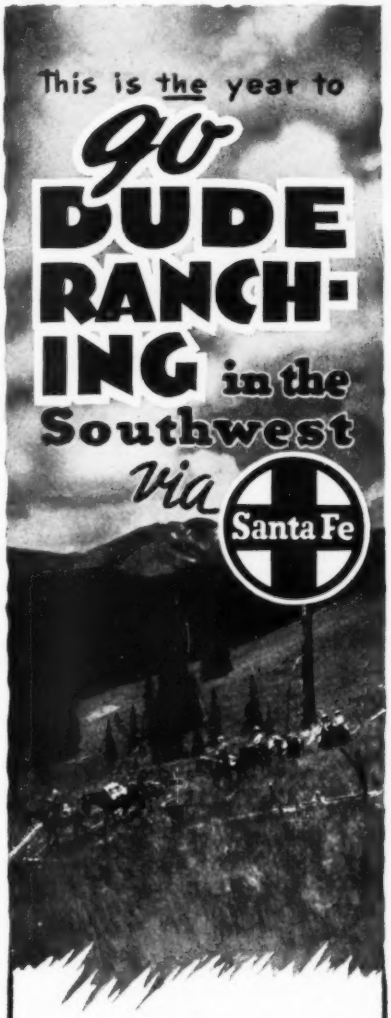
APPROPRIATIONS

H. R. 6709—Tarver — Department of Agriculture Appropriation bill for the fiscal year ending June 30, 1943. Introduced March 2, 1942, and reported (Report No. 1848) same day by the Committee on Appropriations. Under consideration in the House.

GOVERNMENTAL FUNCTIONS

S. 2208—Van Nuys—Second War Powers bill, to further expedite the prosecution of the war. Amended and passed by the Senate January 28, 1942. Passed House amended February 28, 1942. In conference March 4, 1942. Conference report submitted to the House March 12, 1942.

S. 2295—McKellar—To provide for the termination of the National Youth Administration and the Civilian Conservation Corps. Introduced February 23, 1942. Referred to the Committee on Education and Labor.



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H. R. 6768—LANDIS — Authorizing the President to appoint persons to guard plants, material and utilities necessary to the prosecution of the war. Introduced March 11, 1942. Referred to the Committee on the Judiciary.

NATIONAL FORESTS

H. R. 6700—ENGLEBRIGHT—To provide loans for the development of mineral resources found in national forests for successful prosecution of the war. Introduced February 28, 1942. Referred to the Committee on Banking and Currency.

PAYMENTS TO STATES

H. R. 6643—COLLINS—Authorizing appropriations to reimburse states, counties and other political subdivisions for loss of tax receipts on account of the acquisition of certain lands by the United States. Introduced February 23, 1942. Referred to the Committee on Public Lands.

WATER AND STREAM CONTROL

H. R. 6724—DONDERO—Authorizing the construction, repair, and preservation of certain public works on rivers and harbors, etc. Introduced March 4, 1942. Referred to the Committee on Rivers and Harbors.

CAMPS

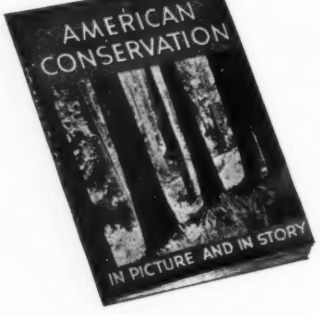
(*Continued from page* 168)

archers, they will soon find that "roving" through the forest furnishes more fun in five minutes than a whole afternoon of the more artificial shooting. A tract of old growth timber with hills, and valleys, plenty of rotting stumps and logs, and not too much underbrush is ideal for roving. Do you see where the sun flecks with yellow light that stump about ninety feet ahead? Whoever sinks his arrow nearest its center wins the point and has the privilege of picking the next target. And so we go through the forest, shooting from different distances, sometimes up hill, sometimes down hill, and these variables develop a keenness of perception never quite matched in target shooting.

The first camps were small. Modern ones are mostly large. This is probably necessary to support financially those who operate private camps. However, some directors have sensed that the vital intangibles are lost when the camp grows beyond a certain size, and have divided their group into smaller units. Among organization camps, the Girl Scouts have advocated and practiced in some localities what they call "unit" camping, the Boy Scouts have their troop camps, and the Life Camps for underprivileged New York children are carrying on successfully this type of camping. Here for instance in the New Jersey mountains there is a Life Camp of eighty girls, but you may look long and carefully before you even find any trace of it!

AMERICAN CONSERVATION

In Picture and in Story



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Instead of the conventional camp of eighty, there are actually ten small camps of eight girls each together with two counselors. Scattered out through the woods, scarcely within earshot of one another, these units insure each camper the privilege of having unique contacts with the surrounding wilderness. Two meals a day are planned by the campers and counselors, who have a budget to live within; and the supplies, after the list is checked by a dietitian, are drawn from the central "country store." The third meal is eaten, all together in the large dining hall where announcements can be made or occasional programs planned to include the whole group. But for the most part each small camp is on its own. There is no program as such, but each morning the campers together with their counselors explore possible choices of activity for the day. In the various camps are counselors, experts at certain crafts, pioneer and otherwise. The children soon find out who these are, and in small groups gravitate to them. When it comes to the swimming period, instead of eighty youngsters splashing around, linked together by the rigid safety rules necessary when large numbers are in the water, there are several small groups of perhaps twenty each, which follow one another.

Camping has now received recognition as a national problem contributing to long time national defense. Last year a bill was introduced in the House of Representatives which would have made available $50,000,000 the first year, $70,000,000 the next, with increases each year until eventually $100,000,000 annually was available to develop school camps. This bill was opposed by large sections of the camping profession on the grounds that the provisions of the act were too vague, and that adequate leadership was not yet available, as well as for other reasons.

Educators believe that for the health and physical development of the nation's children, of which only from five to ten per cent now attend camps annually, this experience should be made available for the many. It would be a tragedy to embark on a large scale program of camping of the wrong sort, or before a sufficient number of properly trained leaders are available. A counselor trained in the technique of the large camp may be worse than useless in the small camp, especially if he or she is unconscious of the beneficial experiences to be derived from a forest environment.

To every parent, teacher, and citizen, the question of choosing a camp for the child should be a significant one. If, now during war time, we are to spend public funds for new camps, let us first train sufficient leaders so as to assure each camp child the kind of experiences which will make him self-reliant and ready to meet the problems of a changing world.

CORK OAK — NATURALIZED AMERICAN

(*Continued from page* 163)

Experiments have shown that acorns sprout much better if they are not allowed to dry out after falling. The acorns collected from western trees were immediately placed in layers of fresh moist sand (not wet) or sandy loam until they sprouted. Then the sprouts were put into sandy-loam-filled one-gallon cans to grow. Set in the shade and watered enough to keep the soil moist, they grew to a height of from eight to fifteen inches in one season.

About 300 cork seedlings sprouted in the state nursery were ready for planting in the spring of 1940, and these were allotted to various sites to determine which locations might best support future groves. One lot of a hundred trees was set out on poor, rocky soil near Oroville, center of the old gold-rush country. They were shaded by burlap screens and given one or two irrigations during the dry season. After a year, most of these trees seem to have survived, showing that water, not soil, is the important factor for young trees. It has been suggested that thousands of acres, turned to unproductive rock piles by hydraulic mining in the old days, may be reclaimed to usefulness if the cork oaks planted near Oroville continue to thrive.

High hopes are held for the 10,000 seedlings grown in state nurseries during last year, as a plan to make cork an important crop of the future is being launched. These seedlings have been offered to reliable California ranchers, without charge, if they will take at least fifty and plant them as directed.

Though the rancher will have to wait many years for the first dividends on his investment of land and care, these trees need not monopolize land that might be otherwise productive while they are maturing. In Spain and Portugal, vineyards often are planted beneath cork oaks, and some farmers raise a husky lot of acorn-fed pigs in their groves.

Cork is one of the oldest materials used by man and was mentioned in recorded history as far back as 2500 years ago. Pliny, the Roman historian, tells of cork stoppers, floats and shoes, and Plutarch records that one of his heroes used a cork life preserver when swimming a dangerous river.

Today, cork supports an industry worth many millions and employing thousands of American workers. It serves a valuable purpose in hundreds of modern devices and in much of our equipment in daily use. Almost every machine, from

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Selected Reading References on Conservation

A COMPREHENSIVE list of reading references forms an appendix to the book — AMERICAN CONSERVATION — In Picture and In Story.

This list has been reprinted as a separate of twelve pages, to meet the many calls for reference material. Copies may be obtained for 10c in coin or stamps.

THE
AMERICAN FORESTRY ASSOCIATION
919 Seventeenth Street, N. W.
Washington, D. C.

an airplane to a vacuum cleaner, uses cork somewhere in its construction. There are about fifty different uses for cork in an automobile. Linoleum and other floor and wall materials have cork in their make-up. Most of the sound-proofing material used in radio studios and motion picture sound stages is of cork composition. In textile mills weaving machinery depends on cork-covered rolls. Sporting goods manufacturers are substantial cork customers, for many things, from the core of official baseballs to fishing tackle, require this rare bark. Cork is used in the manufacture of musical instruments, home novelties, and imitation leather.

The peculiar structure of cork is responsible for the wide usefulness of this unique bark. The bark of most trees is partially fibrous in structure, having long fibers running lengthwise. But cork is made entirely of tiny cells similar to a honey comb, but instead of honey, each cell encloses a microscopic bit of air. These cells are so small that it takes 200 million to make a cubic inch, and each is completely isolated by its walls. Half of the volume of cork is air, which accounts for its lightness and resiliency.

Cork is one of the most stable materials known to industry. It is tough, is little affected by extremes of temperatures or humidity, and retains its efficiency up to a long-postponed deterioration. Even fire has little effect on it. United States Bureau of Standards fire test rated cork "fire retardant." Exposed for twenty minutes to a flame with a temperature of 1,450° F., only the surface of cork was burned, seventy per cent remaining unscathed by the test.

In 1937 the United States imported about nine million dollars' worth of cork. The war today has limited European cork harvesting, but more serious is the transportation problem. It is expensive and hazardous to get cargoes through Mediterranean ports now, and few freighters are available. As supplies are shut off, non-defense use of present cork supplies in this country have to be drastically curtailed so that the defense needs may be supplied. The construction of much military equipment relies on cork parts, including airplanes, artillery shells, tanks, etc. True, cork supplies only small parts for these weapons, but, as in the old story, "for want of a nail the shoe was lost, for want of a shoe, the horse was lost, for want of a horse the rider was lost, and for the want of a rider, the battle was lost," cork is today a strategic material.

The California program may not materially help in the present emergency, but it looks forward to a reliable domestic supply of cork, and eventually perhaps an additional international source for the product. In all, there are about 2,000 mature cork oaks in the state today. Besides the groves planned and now beginning to materialize, it has been suggested that cork oak trees be planted along state and county highways of the warm, interior valleys where they would spread a beautiful canopy of shade. The cork oak, perhaps more than most trees, combines usefulness and beauty, and the investment of care and land in these trees will pay extended dividends, for they live from 150 to 400 years, and will be a legacy of income and beauty for future generations.

WILD RUBBER — CAN WE GET IT?

(*Continued from page* 171)

each of them. I was greatly impressed with the commercial and other possibilities in Brazil and by the friendly manner in which foreign scientists, foreign capital and immigrants from abroad were welcomed and treated by the highly honorable officials, both federal and state, and by the likable Brazilian people.

An amazing variety of products exists in the various forest regions and on the *campos* as well. Some are found in almost unbelievable quantities. In my reports to the government I suggested measures for a wide but conservative exploitation of these resources. Special attention was given to Hevea and the other rubber-producing trees, to cabinet woods, chemical products, nuts, minerals, fisheries and furs.

It may seem strange to include furs in the list of resources of a tropical country; but I found the amount, the variety and, in the case of some species, the quality to be deserving of consideration, especially since the harvesting of furs might well become the means of developing trade in other products. As shown by the success of the Hudson's Bay Company it is possible to interest Indians in peaceful occupations such as the collection of furs, plant products and other things with which they are acquainted. The Indians of the Amazon country know rubber and how to obtain and cure it.

There are ten times as many Indians in

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Brazil as there were in the United States when Columbus first saw America. Most of the Brazilian Indians are peaceable. Many are civilized and are fairly good workers. Like Canada, Brazil has done remarkably well in solving its Indian problem in vast, thinly-populated regions. Commendable missionary work has been done. Fair treatment has been accorded the Indians by the government and the red men have been encouraged to earn a living by doing the kinds of work that appeal to them. These native Americans, as well as the white settlers at scattered points along the Amazon and its thousands of miles of navigable tributaries, could be induced to collect great quantities of rubber and other products of the forest.

These forest workers would need to be given fair treatment, provided with a dependable market, regular transportation and some measure of health service. In addition to the local residents it should be feasible to attract to some of the better rubber districts many families from northeastern Brazil and, if thought desirable, from some of the over-populated West Indian Islands.

In our survey and studies we found that Hevea exists through an enormous extent of forest—an area larger than all of the United States west of the Mississippi. Almost unlimited amounts of high grade rubber are obtainable in the Amazon Basin if gone after in the right way. Many districts contain millions of large Hevea trees in mixture with the other trees. Under proper management such districts might be developed into highly productive wild rubber "orchards," comparable to huge plantations, where rubber crops could be harvested year after year indefinitely.

It is true that rubber trees in the forest are few per acre, but the yield of latex per wild tree in Brazil is high and partly compensates for the more convenient arrangement in the Asiatic plantations. Also it is important to note that the native trees occurring in the forest suffer less from insects and disease than do the trees in a pure stand or solid plantation.

When good management of wild rubber properties has shown a fair profit, additional encouragement will be given to small operators to establish hundreds of small rubber plantations.

The Brazilian Government, through a far-sighted policy some years ago, offered inducements to persons willing to plant rubber trees of various kinds. Quite a number of plantations were thus established. I visited some of these, including the large enterprise initiated by Henry Ford on the Rio Tapajos. Mr. Ford's plantation, aside from any profits he may make, is serving as an experiment station where much useful information is being acquired regarding *Hevea braziliensis*.

Capital at moderate rates of interest, better organization of the industry, establishment of many additional inexpensive trading posts near the places where rubber is gathered, regular transportation, proper equipment, scientific direction of operations, periodic medical assistance and instruction in sanitation, fair prices for the rubber delivered, association of dependable dealers and control through licensing, reasonable export duties and harbor charges—these are some of the measures needed to encourage the wild rubber industry and speed up rubber production in the Amazon country.

There is no doubt about the possibility of obtaining from the forests of Brazil and certain other South American countries many times the amount of rubber now harvested there annually. The material is there. The demand for it exists and is likely to continue for some years. The United States might well finance, organize and supervise the work because it needs the rubber. Brazil and the other countries concerned, being the sovereign owners of the productive territory, would need to give their whole-hearted approval to the project and cooperate in making it practicable. That the South American countries would cordially assist in building up their rubber production and enlarging their markets for other forest products is not to be seriously questioned. In this way they could bring prosperity to large numbers of their citizens, improve their international trade balances and, most important of all, make these two continents safer from invasion.

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WOOD IN FIGHTING SHIPS

(*Continued from page* 157)

plosion, but the crew knows when their boat is hit. They have no doubts.

Now these are the boats you can write about. These are the ones it's fun to hear about. But these by no means are all of the craft that it takes to make up a Navy.

For instance, when war started, the United States Coast Guard became part of the Navy. More than 4,000 boats, most of them small, thus became part of the Navy, too. That gives you some idea of the relative strength of big and little craft.

You hear about the big ones when they come off the ways. But you don't hear about the little jobs which men who once built only yachts are turning out by the hundred. Don't forget, either, about the former pleasure-craft which are now doing a sailor's duty.

Picket boats, patrol boats—what coastal and harbor work could be done without these? Yet you don't read about them any more than you do the mine-sweepers.

Other unspectacular craft are the barges, 450 of which are being built for the Maritime Commission alone, in addition to others on order by the Army and Navy. The Maritime Commission's barges, of seasoned, long-leaf yellow pine, are to be sixty feet long, eighteen feet in beam, with a draft of five feet. Their purpose, as well as the purpose of a hundred thirty-six-foot power boats which the commission has on order, is a secret.

So in this war, as in all our others, wood is still a leading contributor to our maritime effort. For dashing mosquito boats and sub-chasers, for puffing harbor tugs, for the buildings where battleships are born, we can thank our forests.

THE FAST GROWING PINES OF SUMATRA

(*Continued from page* 166)

relation to yield as well as growth, and data are continuously being collected.

In naval stores operations, the French or Bordeaux system of moderate faces is generally employed, roughly two and a half inches wide with several longitudinal faces as conditions require. A new cut is made every three days. Aluminum cups are used for collecting the gum.

The first tapping of second growth pines usually begins in their eighth year on trees of about seven inches in diameter. After this, a combination of tapping and thinning is carried out. Certain trees are selected for thinning but before cutting are tapped to death. This usually requires about three years. In the meantime, the remaining sturdier trees are tapped less severely so as to maintain their growth. After three years the one-face wound is allowed to close, another being cut on the opposite side of the tree. When the diameter of the tree has reached twelve inches, two faces together are usually employed instead of one.

The thinning, tapping and selecting continues until probably 100 healthy trees a hectare, or about forty an acre, remain. These are used as producers for many years until, based on economic calculations of yield values, it may be found wise to cut the area and replant. It is too early as yet to determine how long this cycle may be.

The method and degree of thinning will depend upon the relative value of product for gum compared to pulpwood, which it will be possible to calculate from records of yield, growth and cost. If a high production of gum is desired, a more rapid thinning by over-tapping will be maintained to increase the yield of the producing trees. If pulpwood is found to be the more valuable product, thinning will not be so intense, leaving the cutting for pulpwood to do the thinning. In the future, perhaps some selective cutting may be exercised to provide cheap lumber. However, there are many other native woods more generally used for this purpose.

The enormous amount of work required in building roads through this mountainous area, planting, collecting and transporting the products, is economical mainly because of the cheap coolie labor available, mostly imported from Java. Generally speaking, the Sumatran, be he Malay, Achinese, Batak, or Menangkabon, does not readily work for wages. Therefore, Chinese and Javanese farmers are moving from over-populated Java to settle in Sumatra and work as coolies. In respect to their needs, they secure good wages, lodg-

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ing and hygienic supervision for themselves and their families. At Lake Tangenon the government maintains, for instance, a modern hospital for native workers. The average cost for coolie labor in the government naval stores operations is approximately forty cents for a nine-hour day, including housing, hospital, and other welfare provisions.

With Sumatra and virtually all of the Netherlands East Indies now in the hands of the Japanese, it is obvious that this project must await the recapture of their lands before the spirit of these progressive colonists continues the development of their natural resources. It is hoped that we in America may be privileged to assist them.

A COMMERCIAL BLACK WALNUT VENTURE

(*Continued from page* 174)

apples, pears, peaches and other fruits. In 1936 we had a severe infestation of rose chafer which devoured many of the male catkins before pollination. Since then there has been no recurrence. Leaf-eating insects have attacked the walnuts each year in varying degrees of severity. These include black walnut caterpillar, fall web worm and the hickory-horned devil. Several leaf spot diseases have attacked the leaves, also, causing early defoliation.

Since the leaves are the manufacturing plants of the tree, transforming plant food elements into complex starches and sugars which produce wood and fill the nuts with meat, it is necessary that the leaves remain on the tree if the nut crop is to be salable. To control the leaf-eating insects and leaf spot disease we have applied one spray each year. This is composed of three pounds of arsenate of lead, ten pounds of powdered Bordeaux mixture and a good sticker in one hundred gallons of water. It is imperative, in the latitude of Maryland, to apply the spray early in June if leaf spot diseases are to be prevented. Some trouble was experienced with oyster shell scale during the early years of the orchard but a liquid lime sulphur spray, applied at the time petals of the apple blossoms are falling, controlled this pest without difficulty. One other problem, damage caused by woodchucks, was not so easy of solution. Not only did these animals kill two trees by constructing burrows under them, thereby allowing air to dry the roots, but they also damaged trees by climbing up the trunk and feeding on the tender bark of the branches.

Shooting reduced their numbers but did not eradicate them. Next, exhaust from the tractor motor was used with excellent results. After closing all but one opening of the burrow, a hose attached to the exhaust was run down into the den. This finished them.

Producing a crop of well-filled nuts is at present less of a problem than marketing them at a profitable price. Fortunately, we found markets that enabled us to dispose of the nuts in the shell for $3.50 a bushel, f.o.b. the farm. Little attempt has been made to sell meats, but as the yield increases marketing methods will have to be revised.

That a potential market exists for large quantities of meats of the improved varieties is apparent to anyone who takes the time to investigate. However, this market demands large amounts of one grade of meats. No commercial grove is large enough at present to fill the requirements of even one of the big purchasers.

Because production is low the wholesale market is disorganized and uncertain. Thousands of barrels of meats of wild walnut trees are received to each barrel of improved varieties. However, as the number of commercial orchards increases and production is stepped up a market can be established, particularly if the growers pool their product.

The past ten years has quickened our belief in the possibility of a black walnut orchard. The varieties now available are but variations in the wild nuts though they are superior. However, these are as nothing compared to what might be developed through hybridization and further selection. Such work has been delayed too long. Public-spirited citizens or organizations interested in helping the farmer and the public should undertake such a project.

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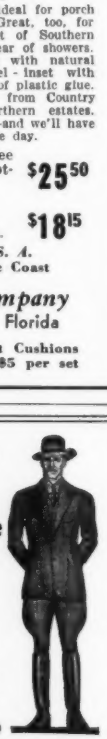

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FISHING

(*Continued from page* 152)

park. Posture and form are as essential in bait and fly casting as they are in golf. Once form and accuracy are acquired, casting becomes a graceful, smooth, effortless affair. Precision means presenting the lure in the most attractive and natural manner—a heavier creel, finer sport.

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Angling has everything. Every state has one or more departments engaged in the continuous business of stocking streams and lakes, consequently there is fair fishing in every state—and there will be in the future, too. There is no famine of fish in the immediate offing.

If you want to fish alone, no one will quarrel with you; if you desire companionship, that is a matter easily remedied. If office or work make heavy demands on your time, try getting up before daylight and driving out to some convenient stream or lake—some good ones are sure to be located near where you live. Spend an hour before breakfast at this most fascinating sport. Or try night fishing. Work and fish—that's always possible.

When the trout season ends, get a four-ounce fly rod and the lightest tackle available and haunt the little ponds and lakes which usually abound in pan fish. You'll have real sport with bluegills, crappie bass, sunfish, perch—plenty of excitement on extremely light tackle. Try making your own flies and bass bugs. Use your imagination—as if I needed to tell you! —and make a few patterns that are unorthodox as to color, shape and size. Once in a while you'll create something that will take fish. When this happens your private joy and pride will know no bounds.

Try fishing! It's good for your soul, excellent for your body. It will teach you to win gracefully—and how to not win. It may even teach you Truth, in spite of the published fact that fishermen are alleged to be untruthful.

The sun, the wind, clean air and exercise; the patience you must use, the peace you will enjoy—all conspire to make of angling a splendid, healthful and uplifting sport.

Don't take my word for it. Try it.

Money back if you are not satisfied!

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Advertising is about like cleaning a walk; it can't be done once for the season.—The Kodak Salesman.

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